

FAA ATO



EASTERN SERVICE AREA ELEVATOR REFURBISHMENT

**MIA – Miami International Airport, FL
TMB – Tamiami-Kendall Airport, FL**

December 7, 2010

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SECTION 01 10 10 - SUMMARY OF WORK – ELEVATOR REFURBISHMENT

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. These documents cover the requirements of the Federal Aviation Administration (FAA) for the refurbishment of an elevator in the Air Traffic Control Tower located as per the attached appendices. The FAA intends to award a firm fixed price construction contract to fulfill this requirement.
- B. All products, materials, accessories etc. shall be the standard cataloged product of a company regularly engaged in the manufacture of said products, materials, accessories etc. for elevators for a period of not less than 5 consecutive years. Each product, material, accessory etc. shall have been in successful service for a period of at least 2 years without modification or redesign.
- C. The Contractor shall inform each equipment supplier, vendor, and technical representative of the nature of the structure that these products, materials, accessories etc. will be installed. Specifically, any supplier or representative shall be given the number of stops, the distance between stops, the total height of the hoist way, the type of construction, e.g. concrete, steel, etc, and any other data that might affect the selection of products, materials, accessories, etc.
- D. The Contractor shall have a permanent address, telephone number and shall have been in continual business refurbishing elevators for not less than 3 years. The Contractor shall be duly licensed to perform elevator refurbishment in the state where the elevator is located.
- E. Project Description:
 - 1. The work shall include furnishing all labor, materials, equipment, and services as necessary to repair the elevator with minimal service outage. The successful Contractor shall be responsible for all aspects of the refurbishment of the elevator as described in this Specification, including any electrical, mechanical, architectural, fire alarm, security, communications and structural work associated with refurbishing the elevator. Refer to the paragraph 1.10 B Schedule Of Work below for more requirements on schedule and elevator outages.
 - 2. As part of the proposal, the Contractor shall provide a complete and comprehensive schedule to the Contracting Officer (CO) for review and evaluation. Upon contract award, the tendered Schedule will become a material term of contract performance. The Schedule shall outline all phases of the work and the impact on the operation of the elevator, particularly with regard to the time the elevator will be totally out of service. The tendered Schedule will be a factor evaluated by the FAA in making a decision for contract award.
 - 3. Where “submittal required” is indicated below, the Contractor shall submit, after award of the contract, the manufacturers’ detailed technical information for FAA review, acceptance, or approval. Also required is a detailed description of the proposed technical means of performing the specified task within the firm fixed price of the executed contract.

1.2 ADA REQUIREMENTS

- A. The list of ADA requirements included in each site specific description is to be used as a guide to upgrade the existing facility’s compliance with Federal Accessibility Standards. Due to the

age and layout of these facilities, not all items listed are technically feasible nor in some instances applicable. It is the desire when replacing components to relocate or to re-configure items to meet the appropriate Architectural Barriers Act accessibility guidelines to the greatest extent practical.

1.3 BASIC METHODS AND MATERIALS

- A. The Contractor shall submit product information, including MSDS sheets, for FAA approval regarding the methods and materials specified hereinafter. Note that some submittals are required to accompany the proposal as noted.
- B. General:
 - 1. Use of any of the substances or performing any of the operations specified herein shall be conducted only in areas with adequate ventilation. The contractor shall provide temporary portable ventilation equipment as required to exhaust any fumes, gases, particulates, etc. generated by the use of the subject substances or performing the processes specified herein. The ventilation system shall discharge the byproducts to a safe location outside the facility.
 - 2. Workers that are using the substances or performing the operations specified herein shall use Personal Protective Equipment (PPE) as required by FAA, OSHA, EOSH or other authority having jurisdiction.
- C. Soldering And Welding:
 - 1. Solder shall be a lead free type for any work on piping systems that convey liquids or gases. Solder for electrical/electronic connections shall also be lead free, and shall be the rosin core type unless a different type of solder or a different procedure is specifically called for by the manufacturer of the pieces to be joined. Mechanically clean all the surfaces to be soldered. Submittal and approval of materials and methods is specifically required.
 - 2. Welding shall be performed outside the facility to the maximum extent possible. Welds that cannot be accomplished outside the facility shall be done during periods, as determined by the RE, that present the minimum possible exposure to FAA personnel and possibilities of disrupting the operations within the facility, typically at night.
- D. Painting, Cleaning, Gluing And Use Of Other Chemicals:
 - 1. The contractor shall submit MSDS sheets for FAA review and approval before using any of the subject substances. These substances shall be, to the maximum extent possible, volatile organic compound (VOC) free or at least very low in VOC's. If products containing VOC's are used, the contractor shall monitor the area to ensure that the presence of VOC's does not exceed recommended minimum threshold levels. Supplementary ventilation shall be used as specified above.
 - 2. All of the subject substances shall be, to the maximum extent possible be "Green", that are biodegradable type substances. If the required substances are not biodegradable, they shall be disposed of in an approved manner in accordance with all federal, state and local codes for hazardous materials.

1.4 SAFETY

- A. All fall protection and safety equipment installation shall be coordinated with the FAA Resident Engineer and in compliance with latest OSHA standards. A fall protection plan shall be submitted to the SSC Contact RE before starting work.

1.5 AVAILABILITY OF UTILITIES AND STORAGE

- A. Water, electricity and sanitary facilities are available for the Contractor's use. Public telephone service is not available. Storage space for materials and equipment is limited on the site. The Contractor shall provide storage for all materials and shall limit on-site storage to no more than two parking spaces.

1.6 CONTRACT METHOD

- A. Construct the Work under a single lump sum contract.

1.7 BID EVALUATION CRITERIA

- A. The following evaluation criteria will be used in determining the successful bidder. Price alone will not be the only determining factor. All items are weighted the same unless stated otherwise.
 - 1. Furnish a comprehensive schedule of the work, including the total time the elevator will be out of service.
 - 2. Furnish with the proposal a list of the manufacturers and product data for the equipment requiring submittals. Sufficient detail should be included to determine compliance with the Statement Of Work. Detailed submittals will be required by the successful contractor.
 - 3. Furnish with the proposal a list of proposed sub-contractors with a list of projects that they were a sub-contractor to the bidder on similar elevator refurbishment projects.
 - 4. Furnish with the proposal the years of experience in the refurbishment of elevators by the company owner and foremen that will be working on this project.
 - 5. Furnish with the proposal the number of years the company has been in the elevator refurbishment business.
 - 6. Furnish with the proposal a list of three (3) references with contact information.
 - 7. Price.

1.8 SITE VISIT

- A. A site visit by interested Contractors is required. Interested contractors may make arrangements by coordinating with the Contracting Officer.

1.9 PERFORMANCE TIME

- A. The Contractor shall complete the repairs to the elevator equipment within the calendar days agreed to after Notice To Proceed. Performance time shall include the Test Period specified herein. The time required for the FAA to review, comment and approve the submittals, and equipment ordering lead-time will not be included in the Contractor's performance time. Notice To Proceed with the construction phase will not be granted until the Contractor certifies to the CO that all required materials and equipment, as approved by the FAA, are in his possession and ready for installation. If there are some items of equipment that can be installed prior to obtaining all of the long lead items and will not require the elevator to be out of service for more than a few hours, these items may be installed provided permission is granted in writing by the COTR. These items might include, but not be limited to, guide rollers, door operators, sump pumps, safety anchors, etc.

1.10 WORK SEQUENCE

- A. Construction Work stages shall be defined by the Contractor. Additional phasing may be necessary due to site availability restrictions. Portions of Stages may be simultaneous.
- B. Schedule of Work
 - 1. The Contractor shall provide a complete and comprehensive schedule as part of its technical proposal at the time of submitting a proposal. The Schedule shall outline all phases of the work and their impact on the operation of the elevator. Overtime work, extended work on weekends and double shifts shall be included as part of the proposal as necessary to accomplish the refurbishment in the shortest time possible. All work that does not require an outage shall be performed during normal daytime hours from 7:30 AM to 4:00 PM unless otherwise scheduled in advance and approved by the CO or COTR. Outages shall be held to a minimum number and a minimum of time.
 - 2. Since the elevator is the main form of transportation to the air traffic control tower cab, the Contractor will be limited to a **20** day period where the elevator is totally out of service. The **20** days shall include the test period defined by 1.18.A specified herein. When the elevator is in service, it shall have the complete complement of code required safeties intact and operational, as FAA safety personnel will not allow FAA employees to ride on an elevator that does not have all safeties in operation. If the Contractor can shorten the total outage period to less than **20** days, this will be used in the evaluation process to determine a successful contractor. Please note, FAA has in the past contracted with elevator refurbishment companies that have held the downtime to 10 calendar days or less. These accelerated schedules were accomplished by working 2 or 3 crews 24/7, and FAA received a quality project

1.11 CONTRACTOR USE OF PREMISES

- A. The FAA shall have the right of unlimited access to the premises.
- B. The FAA or other agencies may be constructing other improvements during a portion or all of this construction. Contractor shall coordinate with any such contractors.
- C. Coordinate use of premises in accordance with the site availability shown on the plans and as directed by the RE.
- D. Assume full responsibility for protection and safekeeping of project materials under this Contract.
- E. Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- F. Parking is not allowed along existing roads or within portions of the site used for active FAA operations.

1.12 ACCESS TO SITE

- A. Contractor's access to site shall be as shown on the plans, if issued, or as directed by the RE. The Contractor shall not permit any unauthorized construction personnel or traffic on the site.

The Contractor shall be responsible for traffic control to and from the various construction areas on the site. Directional signing at the access gate and along the delivery route to the storage area or work site shall be as directed by the RE. The Contractor will not be allowed to close any traffic lanes nor will the Contractor be allowed to impede the flow of airport traffic.

1.13 DEMOLITION

- A. Any equipment obstructing the Contractor's access to the work area shall either be temporarily relocated by the Contractor to a storage area designated by the R.E. or be covered in a manner as to provide suitable access while protecting the Government property from construction damage. At the completion of all work, the Contractor shall return all such items to their original location.
- B. Any unused conduit, wire, elevator equipment, structural supports or other fittings associated with equipment or devices to be removed under this contract shall be disposed by the Contractor within the firm fixed price of the contract.
- C. Remove unused structural support angles, channels, bolts, and similar hardware. Patch any holes resulting from removed equipment, hardware, conduit or pipe with the same material as that of the penetrated surface (i.e.: concrete floor openings shall be filled with concrete). Paint patch to match adjacent undisturbed surface. Fire barriers shall be patched with U.L. Rated assemblies.
- D. Any equipment or material to be removed, unless specified to remain the property of the FAA, shall become the property of the Contractor and shall be transported from the site and disposed in a legal manner.

1.14 MATERIALS DELIVERY TO THE SITE

- A. All material orders for delivery to the site shall use as a delivery address. Delivery trucks shall not pass in front of the terminal, if at all possible, and then only with prior notification and the written approval of Airport Authority.
- B. Normal flow of traffic, into and out of the airport, shall not be impeded. Deliveries can be suspended at the direction of the RE, for any reason, if these requirements are not met.
- C. The Contractor is responsible for immediate clean-up of any debris deposited along the access road as a result of his/her construction traffic.

1.15 SECURITY REQUIREMENTS

- A. Personnel List: Contractor shall provide the Resident Engineer with a list of Contractor's personnel who will require access to the site. The list shall be kept current during project work. The Contractor shall provide all personnel with readily identifiable numbered badges during the period their access to the site is required. Badges shall be in accordance with FAA Facility Requirements and shall be worn on outer clothes at all times when on airport property and at work in the site.
- B. Security Investigation: Contractor's site superintendent shall submit to an FAA security background check and obtain an official FAA contractor ID badge prior to NTP. Other Contractor personnel may be subject to security investigation by FAA. Upon request by the Resident Engineer, the Contractor shall promptly complete all security forms provided by the Resident Engineer.
- C. Right to Search: Current procedures at FAA facilities located within airport boundaries include

the "right to search". If in the judgment of the authorized security guard a cause to search a vehicle or the person of personnel exists, such search will be made.

1.16 CONSTRUCTION AREA LIMITS

- A. The limits of construction material storage areas, equipment storage areas, parking areas, and other areas as required by the Contractor shall be as approved by the RE. Should Contractor find it necessary or advantageous to use any additional offsite area for any purpose whatsoever, Contractor shall, at its expense, provide and make its own arrangements for the use of such additional offsite areas.
- B. Employee Parking. Parking will not be allowed along public right of way or the entrance/exit road. In the event adequate space is not available for parking on the project site the Contractor shall arrange for off-site parking and provide bus transportation of employees to and from the site. No other areas will be made available for Contractor use for parking, staging, trailers, or storage.

1.17 FAA RETAINED EQUIPMENT AND MATERIALS

- 1. See site specific appendices for requirements.

1.18 TEST PERIOD AND FINAL CHECKOUT

- A. The Contractor shall include in the project schedule a test period of not less than 2 days of 8 hours or 1 day of 16 hours of continuous operation without a fault or interruption in the elevator's performance. The sequence shall be as random as possible with stops and starts at each level and runs to random levels. The car shall be operated empty and loaded with at least 500 pounds of test weights for approximately 50% of the time. During the last 4 hours of the second period of operation, one person shall ride the elevator and manually push the call buttons and another person shall observe the diagnostics at the controller. If the elevator should experience a problem, the entire test period shall begin again after the problem has been diagnosed and corrected.
- B. The contractor shall provide continuous monitoring during the test period by a technician knowledgeable and capable of placing the elevator back in service should a fault or other incident take the elevator out of service. The technician shall also be able to rescue any FAA personnel that might get trapped in the elevator due to any interruption in service. The continuous monitoring shall be for 7 calendar days, without a fault or other incident, during any hours, (24/7 for this project) that the ATCT or facility is occupied by FAA personnel during their normal shift hours.
- C. The contractor shall monitor the operation of the elevator through the built-in internet connection for a period of two weeks after the on-site monitoring period has ended. Contractor shall provide dial-up modem and connect to elevator phone line for this monitoring. Connection is required for duration of monitoring. During this period, one of the three telephone numbers that will be called in the event of a fault shall be that of the contractor. The contractor shall respond within 10 hours during this period should a fault or other incident occur.
- D. The final checkout of the controller shall be performed on-site by a factory employed, certified and trained technician. The factory technician shall be on-site for a minimum of 8 hours of normal operation without fault or interruption of elevator service.

- E. FAA will utilize a National Elevator Inspection Service (NEIS) or other third party to examine and inspect the entire elevator refurbishment prior to final acceptance of the project. Contractor shall provide FAA minimum 7 days notice that the elevator will be ready for inspection. Contractor shall be responsible for cost of re-inspection if the elevator does not receive Operating Permit.

1.19 PERMITS AND FEES

- A. Contractor is responsible for applying for and obtaining required permits, and payment for any associated fees. Compliance is required with the conditions of all permits that have been issued. All fees must be paid by the Contractor.
- B. Contractor is responsible for paying all charges associated with the construction of the project. This includes temporary permits, re-inspection fees, connection fees and equipment to be installed by third parties.

1.20 CERTIFICATE OF OCCUPANCY

- A. Contractor may be required to obtain a Certificate of Occupancy or Use from the State Elevator Inspection agency as may be appropriate.

1.21 SUBMITTALS

- A. See site Specification 01 33 00.

1.22 PLANS AND SPECIFICATIONS

- A. In the event of any conflicts, ambiguities or discrepancies among the Contract Documents, the precedence in resolving such conflicts, ambiguities, or discrepancies shall be as follows:
 - 1. The Schedule of Bid Items (excluding the specifications)
 - 2. Representations and other instructions
 - 3. Contract Clauses
 - 4. Contract modifications
 - 5. Addenda
 - 6. Special Provisions shall govern over General Conditions, Division 1, and Technical Specifications.
 - 7. General Conditions shall govern over Division 1, Technical Specifications, and Plans.
 - 8. Division 1 shall govern over Technical Specifications and Plans.
 - 9. Technical Specifications shall govern over Plans and over Standard Specifications and over standards for testing and materials. Drawings take precedence over specifications as to quantity and location. Specifications take precedence over Drawings as to quality of materials and workmanship.
 - 10. Plans shall govern over Standard Specifications and over standards for testing and materials.
 - 11. On the Plans, calculated or figured dimensions shall govern over scaled dimensions.
 - 12. Subject to the foregoing provisions of this paragraph, the more stringent requirements shall apply in the event any conflicts cannot be resolved by applying the order of precedence.
- B. Plans shall be defined, for the purposes of this contract, as shop drawings or other drawings

issued specifically for the installation of any elevator components.

1.23 INSTRUCTION OR OPERATION AND MAINTENANCE MANUALS

- A. Upon completion of work, the Contractor shall submit to the RE four (4) bound copies of an instruction manual (also referred to as Operation & Maintenance Manual). This manual shall contain, but not be limited to, instructions for installation, operation and maintenance, replacement parts list, sequence of operation description, sizing and capacity data and manufacturer's guarantee information for all equipment furnished by the Contractor. An electronic version, or Portable Document File (PDF), shall be provided as well.

1.24 TRAINING

- A. Contractor shall provide a, factory approved, 4 hour training class for four (4) FAA personnel. Contractor shall provide a training sign-in attendance list to the FAA Resident Engineer. O & M manuals shall be delivered prior to this training and shall be included in the training.

1.25 WARRANTIES

- A. The Contractor shall warrant all materials, equipment and labor for all work performed under this contract. This warranty shall be for a period of one (1) calendar year beginning upon the date of NEIS acceptance inspection. The warranty shall be unconditional and the Contractor shall furnish all labor and materials required to repair or replace defective or failed portions of the contract work. Any warranty repairs shall be mobilized and on-site within a maximum of 24 hours after notification by the Government of an elevator service problem.
- B. The Contractor shall furnish to the Resident Engineer (R.E.) the manufacturer's certificate of this warranty stating the beginning and ending dates of the period of coverage. Also, guarantee that each piece of apparatus shall have a capacity or performance of not less than that specified when the apparatus is operating under specified design conditions.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 10 10

SECTION 01 10 12 - CONSTRUCTION ADMINISTRATION FORMS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. The following listed forms are hereby made a part of the Construction Documents.

PART 2 - PRODUCT

2.1 INDEX OF CONSTRUCTION ADMINISTRATION FORMS FOR CONTRACTOR

RFI Standard Form
Submittal Approval Form
FAA Pre-Construction and Maintenance Project Safety and Health Checklist
Job Memorandum (JM)

PART 3 - EXECUTION

- A. During the administration of the Contract, the Contractor will be required to complete various construction administration forms as a part of the Management System. These forms are identified above and will be issued at the Pre-Construction Conference. These forms may be revised during the construction period and the Contractor will be required to comply with any such revisions.

END OF SECTION 01 10 12

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Federal Aviation Administration

Request For Information
No. 000

Title: _____

From:

Contractor

Contractor address

Project:

JOB TITLE

Job Location

To:

Phone:

Fax:

Contact:

Contract:

Phone:

Fax:

RE:

Drawing or Spec:

Date Started:

Priority: Normal

Potential Cost Impact? ☐ Yes ☐ No

Date Required:

Potential Schedule Impact? ☐ Yes ☐ No

Attachments? No

Date Completed:

If yes to either, explain below.

Question (Include Potential Impacts):

Response:

By: _____, FAA

Date: _____

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APPROVAL OR DISAPPROVAL OF CONTRACTOR'S MATERIALS OR SHOP DRAWINGS				DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION			
1. TO: <div style="text-align: center;">Contractor Address</div> <div style="text-align: center;">Tel: Fax:</div> ATTN:				2. DATE CONTRACTOR'S SUBMITTAL RECEIVED:		3. DATE SUBMITTAL RETURNED:	
				4. GOV'T TRANS. NO.		5. CONTRACTOR'S TRANS. NO.	
				6. PROJECT NAME			
				7. CONTRACT NUMBER			
8. TRANSMITTAL REFERENCE TO CONTRACT DRAWINGS and/or SHOP DRAWINGS							
9. TRANSMITTAL REFERENCE TO CONTRACT DRAWINGS AND PARAGRAPH NUMBER and/or CHANGE ORDER NUMBER							
10. FACTS: Gentlemen: We are returning herewith the following Submittal Data:							
A. ITEM NO.	B. NO. COPIES	C. NAME OF SUPPLIER	D. TYPE OF MATERIAL OR EQUIPMENT	E. APPROVAL		F. NOT APPROVED †	REVISE AND RESUBMIT
				AS SUBMITTED	AS NOTED*		
G. REMARKS							
H. STIPULATIONS							
*Data marked "Approved as Noted" is satisfactory, contingent upon contractor acceptance of corrections and/or notations, and if accepted does not require re-submittal. †Data marked "Not Approved" does not meet job requirements, and contractor must re-submit on proper basis. Approval of Data does not obviate Contractor Responsibility for correct take-off or installation clearance.							
Carbon Copies Transmitted To:				Sincerely,			
				_____ Resident Engineer			

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FAA PRE-CONSTRUCTION AND MAINTENANCE PROJECT SAFETY AND HEALTH CHECKLIST

Purpose

This checklist is intended to be used as a tool by RE/COTR's, designated facility POC's, or SSC managers who oversee construction and maintenance activities that potentially have Occupational Safety, Health, and Environmental (OSH/E) related impacts on AT/AF operations. This tool shall be used, as appropriate, during critical phases of construction and maintenance activities (e.g. the pre-construction meeting, 30-60 days prior to commencement of work, weekly/daily construction meetings, etc.). Emphasis should be placed on using this checklist as a tool to assess as well as reassess hazards as the project progresses. Specifically, this checklist is intended to:

- Promote sensitivity to potential OSH/E hazards associated with projects and stress the importance of not disrupting NAS operations
- Assist in identifying and validating potential project hazards and associated risks
- Assist in preventing safety and health incidents/accidents and facility shutdowns
- Ensure appropriate contractor measures and controls are in place to address potential project hazards
- Facilitate discussion with the contractor regarding plans to prevent/minimize potential incidents/accidents
- Enhance coordination between OSH/E professionals, project personnel and contractors
- Facilitate review of critical FAA OSH/E procedures with contractors
- Raise OSH/E awareness

- This checklist relies on the training and professional judgment of the user. OSH/E personnel should be consulted as needed.

- A facility POC with a thorough understanding of facility procedures and equipment considerations should participate in the site walk-through.

NOTE: For small procurements (e.g. credit card purchases) and internal FAA projects (e.g. field maintenance party projects), without specifications, immediately contact the designated OSH/E professional for assistance in completing this checklist.

1 Project Summary Information

Fill in the requested site-specific information.

Project Name, Description and Location: _____

Project/Activity/Task (detail): _____

Planned Start: _____

Expected Completion Date: _____

ANI/Contractor Contact: Name: _____

Phone: _____

OSH/E Contact: Name: _____

Phone: _____

Facility AF POC: Name: _____

Phone: _____

2 Facility Procedures

Review site specific FAA procedures and considerations with the contractor. For example, discuss when or how during the project, emergency plans will be used/required. After the procedures have been reviewed, perform a site walk-through with the contractor.

Facility Procedures	Reviewed?			Notes
	Yes	N/A	No	
Asbestos Contingency Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Critical Power Systems Awareness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Lock Out/Tag Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Work Permits (e.g. Asbestos, Lead)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Emergency Plans (e.g. Occupant Emergency Plan)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Impacts to Fire Alarm and Suppression Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Site Walk-Through with Facility POC & Contractor(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hazard Communications (e.g. MSDS's)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other (e.g. Access/Security/Communications Equip.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2 Project Hazard/Risk Analysis

Review site specific FAA procedures and considerations with the contractor. For example, discuss when or how during the project, emergency plans will be used/required. After the procedures have been reviewed, perform a site walk-through with the contractor.

Potential Project Hazards (Consider Sensitive AT/AF Operations)	Level of Potential Risk For Exposure/Release/Incident			Notes
	High	Low	N/A	
Hazardous Substances and Env Controls				
Asbestos (e.g. Tiles & Insulation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Chemical, Gas, Fumes, Dust, Radiation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Indoor Air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Lead-based Paint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Electrical Power Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pressurized Equipment Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Work at Heights (>6 feet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other (e.g. Confined Space)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4 Site Safety and Health

After reviewing the potential hazards and risks in block 3, ensure that the contractor has identified measures and controls to address applicable site safety and health risks (e.g. through discussions, available site safety plans, or other applicable documents). In your judgment, if the contractor has appropriate measures to address the potential project hazards (see block 3), check the appropriate YES boxes below. If a potential project hazard has been identified in block 3 and no associated measures or controls are evident, then check the appropriate NO boxes below. If a NO box is checked, use the closeout date box to indicate when appropriate measures or controls have been incorporated into the contractor's site safety and health approach.

Program Elements	Yes	N/A	No	Closeout Date	Notes
Hazardous Substances & Environmental Controls					
Asbestos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Chemicals (e.g. Introduced to site) Provide MSDS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Gas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fumes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Lead Paint/Other Coatings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Radiation and Electric Fields	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ventilation and Exhaust Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Electrical Power Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Procedures for Critical Power Systems Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Provisions for GFCI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Control of Hazardous Energy (lockout/tagout) (e.g. electrical, mechanical, hydraulic, thermal, radiation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Pressurized Equipment and Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Work at Heights (>6 feet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Safe Access and Fall Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Work Platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Floor and Wall Holes and Openings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Personal Protective and Safety Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fire Prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Accident Prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Excavations (New Construction or Tie in)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Welding and Cutting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Demolition of Existing Facility in Whole or Part	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Medical and First Aid Requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Hand and Power Tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Material Handling, Storage, and Disposal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Rigging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Machinery and Mechanized Equipment (e.g. Equipment & Operator Certifications)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Sanitation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Lighting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Concrete & Masonry Construction & Steel Erection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Hazardous, Toxic, Radioactive Waste Activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Other (e.g. Noise)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

5 Review Information

The appropriate FAA point of contact and the contractor shall sign below to document discussion of the items on this form.

Reviewed By:	Date
FAA POC: <u>See Addendum</u>	
Contractor: <u>See Addendum</u>	
Incident Prevention and Hazard Control Methods Discussed? <input type="checkbox"/> Yes <input type="checkbox"/> No	

This block indicates routing of this checklist for project coordination.

This form has been forwarded to:	Name	Date
SECM, OSH/E Contact:	<u>See Addendum</u>	
AF Facility Manager:	<u>See Addendum</u>	
AT Facility Manager:	<u>See Addendum</u>	
Other:	<u>See Addendum</u>	

Notes (e.g. provide further explanation of potential hazards, locations, etc. below and attach additional sheets if necessary.)

ANI Risk Mitigation Addendum

Communicate Your Activities

Review the project construction or installation activities with emphasis on potential risks to unscheduled interruptions with the site AF POC. Provide plans to mitigate each of those risks and to restore operations should an unscheduled interruption occur. Have the AF POC and the AF site manager sign the check sheet indicating approval of the plans and fax to the ANI platform manager for approval BEFORE beginning work. Ensure that the AF POC coordinates with air traffic to keep them aware of installation activities. *Items marked with an asterisk require daily coordination with AF..*

Elements	Risk		Mitigation and Restoration Plan
	Yes	No	
Engineering Package			
Review of risk mitigation procedures and cut-over plans	<input type="checkbox"/>	<input type="checkbox"/>	
Airport Access and On-Airport Driving			
Badging	<input type="checkbox"/>	<input type="checkbox"/>	
Airport driver training	<input type="checkbox"/>	<input type="checkbox"/>	
Communication with ATCT	<input type="checkbox"/>	<input type="checkbox"/>	
Properly marked vehicle	<input type="checkbox"/>	<input type="checkbox"/>	
Access to Electrical Power			
* Essential power panels, risk of opening panel, installing conduit, manipulating wiring, etc.	<input type="checkbox"/>	<input type="checkbox"/>	Site tech shall supervise any work in power panels and energize/de-energize circuits.
* Critical power panels, risk of opening panel, installing conduit, manipulating wiring, etc.	<input type="checkbox"/>	<input type="checkbox"/>	Site tech shall supervise any work in power panels and energize/de-energize circuits.
Cable raceways	<input type="checkbox"/>	<input type="checkbox"/>	
Demarcs, Junction Boxes, Racks and Buried Cable			
Proper identification of cables and terminations	<input type="checkbox"/>	<input type="checkbox"/>	
Proximity of critical operational circuits	<input type="checkbox"/>	<input type="checkbox"/>	
* Coordination of digging activities	<input type="checkbox"/>	<input type="checkbox"/>	
Backup Systems			
Checkout of backup systems that may be required after unscheduled interruption (including diverse routes).	<input type="checkbox"/>	<input type="checkbox"/>	
Checkout of operational systems prior to modifications	<input type="checkbox"/>	<input type="checkbox"/>	
Access to Signal Cable Raceways			
Identify affected cable trays	<input type="checkbox"/>	<input type="checkbox"/>	
ATCT shaft	<input type="checkbox"/>	<input type="checkbox"/>	
* Operational consoles	<input type="checkbox"/>	<input type="checkbox"/>	
Removing unused cable	<input type="checkbox"/>	<input type="checkbox"/>	
Equipment Releases			
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	
Coordination with AF/AT	<input type="checkbox"/>	<input type="checkbox"/>	
Log entries	<input type="checkbox"/>	<input type="checkbox"/>	Review maint log entries ensuring purpose for release is included.
* Removal from service	<input type="checkbox"/>	<input type="checkbox"/>	Will ask site technician to remove equipment from service.
Work Outside of Normal Duty Hours			
Schedule of activities	<input type="checkbox"/>	<input type="checkbox"/>	
Coordination of OPS overtime handoff if required	<input type="checkbox"/>	<input type="checkbox"/>	
Unscheduled Interruptions			
Restoration	<input type="checkbox"/>	<input type="checkbox"/>	
Return to service	<input type="checkbox"/>	<input type="checkbox"/>	Site tech must return to service and make log entries.
Notifications	<input type="checkbox"/>	<input type="checkbox"/>	Site AF manager and platform manager shall be notified ASAP.
Contractors			
Badging	<input type="checkbox"/>	<input type="checkbox"/>	
Oversight	<input type="checkbox"/>	<input type="checkbox"/>	ANI/TSSC shall provide continuous oversight of all contractors.
Parking	<input type="checkbox"/>	<input type="checkbox"/>	

AF Site POC:

Date _____

AF Site Manager:

Date _____

ANI Site POC:

Date _____

ANI Platform Manager:

Date _____

Copies provided to Site AT, AFSMO (for SECM and OSH/E contact), and ANI Operations Liaison

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U.S. Department
of Transportation
**Federal Aviation
Administration**

ATLANTA TERMINAL ENGINEERING CENTER

P.O. Box 20636
Atlanta, Georgia 30320-0631

JOB MEMORANDUM (JM)

JM No.: _____ Date: _____ Sheet ____ of ____

To: _____

Project: _____ (B.P. _____)

Field inspection has indicated that the following work is not being performed in accordance with the Contract Documents. The Contractor is requested to provide his proposed Contractor Corrective Action (CCA) no later than _____.

Reference: Sheet No.: _____ Specification No.: _____ Other: _____
Subject: _____

Description _____ of _____ Discrepancy: _____

Resident Engineer _____

CONTRACTOR'S CORRECTIVE ACTION (CCA)

CCA No.: _____ Date: _____

To: **FEDERAL AVIATION ADMINISTRATION – RESIDENT ENGINEER**

The following action has been
taken _____

Contractor _____

FAA's
Response: _____

cc: _____
FAA Contracting Officer, FAA Project Engineer, A/E

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SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Submittals listed or specified in this Contract shall conform to the provisions of this section, unless explicitly stated otherwise.

1.2 REFERENCES

Not used.

1.3 DEFINITIONS

- A. Submittal Definition: Shop drawings, product data, samples, administrative and closeout submittals, and additional data presented for review and approval. Contract clauses referring to material, workmanship specifications and drawings for construction shall apply to all submittals.
- B. Types of Submittals
 - 1. Shop Drawings. As used in this Section, drawings, schedules, diagrams, and other data prepared specifically for this contract, by the Contractor or through the Contractor by way of a subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate a portion of the work.
 - 2. Product Data. Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate a portion of the work, but not prepared exclusively for this Contract. Information such as mix design, material characteristics, and similar data is included herein.
 - 3. Samples. Physical examples of products, materials, equipment, assemblies, or workmanship, physically identical to a portion of the work, illustrating a portion of the work or establishing standards for evaluating the appearance of the finished work or both.
 - 4. Administrative and Closeout Submittals. Submittals of data for which reviews and approval will be to ensure that the administrative requirements of the project are adequately met but not to ensure directly that the work is in accordance with the design concept and in compliance with the contract documents.
- C. Approving Authority: Contracting Officer's Representative (COR) or Resident Engineer (RE).
- D. Work: As used in this Section, the construction required by the contract documents, including labor necessary to produce the construction and materials, products, equipment, and systems incorporated or to be incorporated in such construction and including materials, products, equipment, and systems produced both on-and off-site.

1.4 SUBMITTALS

- A. Submit the following in accordance with the requirements of this section.
1. Submittal status log: List each submittal. Include for each submittal the specification section number; description of item for which the submittal is required; and the Contractor's scheduled date for the submittal. Submit the log within 15 days after notice to proceed. Indicate required approval date to maintain project schedule.

1.5 PROCEDURES FOR SUBMITTALS

A. Limits and Constraints Regarding Submittals

1. Submittals shall be complete for each portion of the work; components of the work interrelated as a system shall be submitted at the same time.
2. When submittal acceptability is dependent on conditions, items, or materials included in separate subsequent submittals, the submittal will be returned without review.
3. Submittals of information not required as a submittal, or covering work for which the submittals have been returned as "No Exceptions Taken" will be returned without review.
4. Approval of a separate material, product, or component does not imply approval of assembly in which the item functions.
5. The work shall conform to approved submittals, except contractor shall conform to the contract requirements and resubmit the submittal if a previously approved submittal has an error or omission.
6. When submitting for approval material which is other than that cited in the contract, submit the necessary scale drawings, wiring and control diagrams, cuts or entire catalogs, pamphlets, descriptive literature, and performance and test data of both the material specified and the material he wishes to substitute in the number of copies of each as required under the contract.

B. Scheduling of Submittals

1. Coordinate preparation and processing of submittals with performance of the work so that work will not be delayed by submittal processing. Coordinate and sequence different categories of submittals for same work, and for interfacing units of work, so that one will not be delayed for coordination with another.
2. Except as specified otherwise, allow a review period, beginning with receipt by the approval authority, that includes at least 20 working days.

C. Substitutions: Substitutions from contract requirements require Government approval and will be considered where advantageous to the Government. Where substitutions are proposed for consideration, submit a written request, with documentation of the nature and features of the substitution and why the substitution is desirable and beneficial to the Government. The proposed substitution shall be identified separately and included along with the required submittal for the item. When a substitution is submitted for approval, the Contractor warrants the following:

1. Substitution Is Compatible: The Contract has been reviewed to establish that the substitution, when incorporated, will be compatible with other elements of the work.

2. Contractor is Responsible: The Contractor shall take action and bear the additional cost, including review costs by the Government, necessary because of the proposed substitution.
- D. Resubmittal Costs: Initial submittals requiring Government approval will be reviewed at no cost to the Contractor. The cost of reviewing resubmittals, for reason of failure of the initial submittal to meet contract requirements, shall be the responsibility of the Contractor. The COR will issue a deductive contract modification to reduce the contract price by \$350.00 for each resubmittal of items requiring Government review and approval. The contract completion date will not be extended due to non-compliance with submittal requirements.
- E. Contractor's Responsibilities:
1. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and Contract documents.
 2. Ensure that material is clearly legible. Ensure required specialty stamps are affixed and signed.
 3. Stamp each sheet of each submittal with the Contractor's certifying stamp, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only. Word the submittal stamp as follows:
"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated into Contract Number _____, is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval.
Certified by _____ Date _____"
 4. Sign the Contractor's certification. The person signing the certification shall be one designated in writing by the Contractor as having that authority. The signature shall be in original ink. Stamped signatures are not acceptable.
 5. Transmit submittals to the approving authority in orderly sequence, in accordance with the Submittal Status Log, and to prevent project delays and delays in work by the Government or separate contractors.
 6. Advise the approving authority of substitution, as required by the paragraph entitled "Substitutions."
 7. Correct and resubmit submittal as directed by the approving authority. Direct specific attention, in writing or on resubmitted submittal, to revisions not requested by the approving authority on previous submissions.
 8. Retain a copy of approved submittals at the project site, including the Contractor's copy of approved samples.
 9. Furnish additional copies of submittals if requested by the COR.
 10. Ensure no work is begun until the submittals for that work have been returned with a review comment other than "Revise and Resubmit" or "Rejected".
- F. Approving Authority's Responsibilities:
1. Submittals will be reviewed for approval with reasonable promptness and only for conformance with project design concepts and compliance with the contract documents. If a substitution is not identified as required by the paragraph entitled "Substitution", then the approval of the submittal SHALL NOT be an approval of the substitution.

2. The checking, marking or approval of the shop drawings and/or product data by the COR shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory. Approval will not relieve the contractor of the responsibility for any error which may exist. The contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work.
 3. Submittals will be returned with one of the following notations:
 - a. Submittals marked "As Submitted" indicate the work may proceed as presented in the submittal.
 - b. Submittals marked "As Noted" indicate there are markings in the submittal that must be included to result in an acceptable submittal. Contractor may proceed with the work by accepting and incorporating the markings in the finished work unless the "Revise and Resubmit" box is checked.
 - c. Submittals marked "Not Approved" indicate the submittal has failed to meet the specification requirements and work may not proceed.
 - d. Submittals marked "Revise and Resubmit" must be modified and resubmitted. The revised submittal number must indicate that it is a resubmittal of a rejected submittal.
- G. The transmittal sheet returning the submittal will be initialed.

1.6 FORMAT AND QUANTITY OF SUBMITTALS

- A. Transmittal Form: Transmit each submittal, except sample installations and sample panels, to the office of the approving authority. Transmit submittals with a transmittal form approved by the COR and standard for the project. The transmittal form shall identify the Contractor, indicate the date of the submittal, and include information prescribed by the transmitted form and required in the paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations.
- B. Identifying Submittals: Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on the transmittal form. Mark each copy of each submittal identically, with the following:
 1. Project title and location.
 2. Construction contract number.
 3. The Section number and paragraph number of the Section by which the submittal is required and the paragraph to which it conforms.
 4. The name, address, and telephone number of the subcontractor, supplier, manufacturer and any other second tier contractor associated with the submittal.
 5. Product identification and location in project.
- C. Format and Quantity for Shop Drawings
 1. For shop drawings presented on sheets larger than 11-inches by 17 inches, submit two printed copies and one Portable Document Format (PDF) file transmitted on 700 MB compact disks (CD) of each shop drawing prepared for this project.

2. For shop drawings presented on sheets 11-inches by 17 inches or less, submit two printed copies with each bound in a separate volume and a PDF file transmitted on 700 MB compact disks (CD) of each shop drawing prepared for this project.
 3. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to the information required in the paragraph entitled "Identifying Submittals."
 4. Dimension drawings, except diagrams and schematic drawings; prepare dimensioned drawings to scale. Identify materials and products for work shown.
 5. Shop drawings shall be not less than 8 1/2 by 11 inches or more than 36 by 42 inches.
 6. After review, the approving authority will return a PDF file and a marked original.
- D. Format and Quantity for Product Data
1. Submit two printed copies with each, bound in a separate volume and a PDF file transmitted on compact disk (CD) or diskette of each Product Data prepared for this project.
 2. Present submittals for each Section as a complete, bound volume. Include a table of contents listing page and catalog item numbers for product data.
 3. Indicate, by prominent notation, each product that is being submitted; indicate the Section and paragraph numbers to which it pertains.
 4. Supplement product data with material prepared for the project to satisfy submittal requirements for which product data does not exist. Note that the material is developed specifically for the project.
- E. Format and Quantity of Samples:
1. Furnish samples in the sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately the same size as specified:
 - a. Sample of equipment or device: Full size.
 - b. Sample of materials less than 2 by 3 inches: Built up to 8 1/2 by 11 inches.
 - c. Sample of materials exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.
 - d. Sample of linear devices or materials such as conduit and handrails: 10-inch length or length to be supplied, if less than 10 inches.
 - e. Sample of non-solid materials such as sand and paint: Pint.
 - f. Color selection samples: 2 inches by 4 inches.
 - g. Sample panel: 4 feet by 4 feet.
 - h. Sample Installation: 100 square feet.
 2. Samples showing range of variation: Where variations are unavoidable due to the nature of the materials, submit sets of samples of not less than three units showing the extremes and middle of the range.
 3. Quantity, unless otherwise specified:
 - a. Submit two samples, or two sets of samples showing range of variation, of each required item. One approved sample or set of samples will be retained by the approving authority and one will be returned to the Contractor.
 - b. Submit one sample panel. Include components listed in technical section or as

- directed.
- c. Submit one sample installation, where directed.
- 4. Reusable samples: Incorporate returned samples into the work only if so specified or indicated. Incorporated samples shall be in undamaged condition at the time of use.
- 5. Recording of sample installation: Note and preserve the notation of the area constituting the sample installation but remove the notation at the final clean up of the project.
- 6. When a color, texture or pattern is specified in naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.
- 7. Transmittal Form for samples shall identify manufacturer, model, type, color, etc. sufficient to reorder or replace.
- F. Format and Quantity of Administrative and Closeout Submittals
 - 1. Unless otherwise specified, submit administrative and closeout submittals in the format and quantities required for shop drawings.
 - 2. Comply with section entitled "Contract Closeout Procedures".
- G. A Portable Document Format (PDF) file for each shop drawing, product data, and sample transmittals shall be uploaded to FAA's KSN website. Website link and access will be provided by RE.

1.7 PROGRESS PHOTOGRAPHIC SUBMITTALS

- A. Still Photographs: Before construction operations have started at the site, the contractor shall take and provide 25 color photographs showing the existing conditions and thereafter an average of 25 views shall be taken each month until completion of the work. An electronic file of each view shall be submitted to the RE promptly after taking the views.
 - 1. Photographs shall be made using a digital camera of at least 4 mega pixel size. All digital images shall be submitted on CD along with the monthly photographs.
 - 2. The contractor shall notify the RE 24 hours in advance of taking any photographs.
- B. Ownership of Photographs: Any and all still photographs, digital files, and video tapes taken of the construction area are the property of FAA and shall not be released to any source whatsoever without the prior written permission from the RE. This provision shall prevail for the duration of the contract and indefinitely thereafter.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 33 00

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SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
1. Inspection procedures.
 2. Punch list.
 3. Warranties.

1.2 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 2. Advise FAA of pending insurance changeover requirements.
 3. Obtain and submit releases permitting FAA unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 4. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
 5. Deliver tools, spare parts, extra materials, and similar items to location designated by FAA. Label with manufacturer's name and model number where applicable.
 6. Make final changeover of permanent locks and deliver keys to FAA. Advise FAA's personnel of changeover in security provisions.
 7. Complete startup testing of systems.
 8. Submit test/adjust/balance records.
 9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 10. Advise FAA of changeover in utilities.
 11. Submit changeover information related to FAA's occupancy, use, operation, and maintenance.
 12. Complete final cleaning requirements, including touchup painting.
 13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion, also referred to as the Contractor Acceptance Inspection (CAI). On receipt of request, COTR will either schedule the inspection within 14 days or notify Contractor of unfulfilled requirements. COTR will prepare the Certificate of Substantial Completion after the inspection or will notify Contractor of items, either on Contractor's list or additional items identified by COTR, that must be completed or corrected before certificate will be issued. COTR will also provide a punch list that will form the basis of requirements for the Final Completion.

1.3 FINAL COMPLETION

- A. Preliminary Procedures: Contractor should request final inspection prior to contract completion date. Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a Final Application for Payment.
 2. Submit certified copy of COTR's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by COTR. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 4. Submit a letter from the airport certifying that work areas located on the airport were left in a satisfactory condition.
 5. Perform a final cleaning in accordance with Section 01 10 00.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, COTR will either proceed with inspection or notify Contractor of unfulfilled requirements. COTR will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1.4 WARRANTIES

- A. Submit warranties in accordance with Section 01 10 00. Warranty period shall begin on date of Substantial Completion as listed in Certificate of Substantial Completion.
- B. Partial Occupancy: Submit properly executed warranties within fifteen (15) days of completion of designated portions of the Work that are completed and occupied or used by FAA during construction period by separate agreement with Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 01 77 00

SECTION 02 01 00 – INTERIM LIFE SAFETY MEASURES FOR FACILITIES UNDER CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY OF WORK

- A. During construction activities, it is likely temporary hazards may be posed due to the work being conducted in the facility. Interim Life Safety Measures (ILSM) are actions that must be taken to compensate for the temporary hazards. This document addresses administrative actions which must be taken to ensure the current level of life safety is maintained at all times and occupants are not subjected to hazardous conditions for even short periods of time.
- B. Implementation and Enforcement: Implementation and enforcement of ILSM is the responsibility of all occupants within the building, including employees and construction personnel. However, primary identification of hazards and the actions taken to compensate for temporary hazards are the responsibility of the Contractor. All ILSM are subject to approval by the Resident Engineer.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION MEETING

- A. Prior to commencement of construction, conduct a meeting to inform all Tower and Base Building occupants (employees and construction personnel) of the project scope and duration. This should include, at a minimum, the following:
 - 1. An overview of the construction project.
 - 2. A preliminary schedule for the construction.
 - 3. Discussion of affected fire protection and life safety systems including, active and passive features.
 - 4. Discussions of the effect on daily and emergency operations.
 - 5. Handout of written policies for ILSM for all employees and construction personnel.
 - 6. Demonstration of signs, messages, etc., to be used to identify hazardous conditions and the corresponding ILSM.
 - 7. List of contacts for reporting hazardous conditions.
 - 8. Discussion of anticipated hazards throughout the project and the ILSM for each.

3.2 ACTIVE AND PASSIVE FIRE PROTECTION AND LIFE SAFETY FEATURES

- A. Due to the criticality of FAA facilities, most facilities are provided with a number of active and passive fire protection and life safety features. If any of these features are compromised in any way, ILSM shall be instituted immediately. These features include:
 - 1. Fire-resistive construction.
 - 2. Stair ventilation system (stair pressurization or vented vestibule).
 - 3. Fire detection and alarm system.
 - 4. Exit signage.
 - 5. HVAC shutdown.
 - 6. Unlocking security doors.

3.3 SITUATIONS COMPROMISING LIFE SAFETY

- A. General concepts of situations which compromise the level of life safety as required by the applicable codes and standards include:
 - 1. Blocked or obstructed exits.
 - 2. Obstructed access for emergency vehicles and personnel.
 - 3. Fire protection system malfunctioning or out of service.
 - 4. Storage of additional combustibles or flammable liquids.
 - 5. Temporary sources of ignition due to construction activities (cutting, welding, etc.).
 - 6. Temporary penetrations in fire-rated walls and partitions (including missing doors).
- B. Single Means of Egress: All work shall be conducted in such a way as to not obstruct or compromise the single means of egress from the ATCT.

3.4 SMOKING

- A. Smoking shall not be permitted in areas under construction at any time in FAA facilities.

3.5 NOTIFICATION SIGNAGE

- A. The Contractor shall provide appropriate signage, in locations approved by the Resident Engineer, to notify occupants of current activities and ILSM in effect at the facility. The signage shall be verified prior to each construction shift and employee shift. The signage shall indicate the present hazards and the safety measure provided to compensate for the hazards.

3.6 QUALITY CONTROL

- A. During construction, the following practices shall be adhered to in addition to those required for specific hazards discussed below:

1. Construction personnel shall check all doors opening into stairs to ensure door hardware is functioning properly. This includes a visual inspection of all doors to ensure the construction has not been compromised and checking all door hardware including latching hardware and self-closing devices to verify proper operation. Any deficient components shall be repaired or replaced immediately.
2. The temporary use of wood chocks or other objects to prop open fire-rated doors shall be permitted as necessary for construction work. At the completion of work for the day, the construction supervisor shall verify all propped doors have been returned to the closed position.
3. The construction supervisor shall inspect the job site a minimum of twice per week to verify all life safety features are present and operational and have not been damaged by construction, including:
 - a. Exit signage.
 - b. Exits are free of storage or obstructions.
 - c. Exit stairs, including treads, landings, handrails, headroom.
 - d. Exit illumination.
 - e. Emergency lighting (battery-operated).
 - f. Evacuation route maps (ensure these are installed and readily visible).
4. If the fire alarm system is not provided with offsite monitoring, provide a telephone with a direct line to the fire department for notification in case of a fire. The Resident Engineer shall approve the location of the telephone.
5. Inform the fire department of construction activities in the facility and provide them a copy of written ILSM policies. The Contractor shall regularly update the fire department on the status of construction and ILSM (minimum of once every two weeks).

3.7 OPERATIONAL FIRE ALARM SYSTEM

- A. If the facility fire alarm system is not operational, is malfunctioning, or is in a trouble condition due to construction activities, the Contractor shall provide, at a minimum, the following additional ILSM.
- B. Inform Fire Department: Inform the fire department of the problems with the facility fire alarm system and inform them of the ILSM being taken to compensate for the deficient system.
- C. Trouble Signals: Ensure trouble signals at the main fire alarm control panel and the Cab and TRACON annunciator panels remain functional until the system is returned to proper function. Trouble signals at either panel shall not be bypassed.
- D. Magnetic Door Hold-Open Devices: Test magnetic door holders to ensure these devices still operate via the fire alarm system. If door holders do not work, all door holders shall be disabled and shall not be returned to use until the fire alarm system is returned to normal.
- E. Facility Inspections: Construction supervisors shall inspect all areas prior to each shift to ensure all active and passive fire protection features are still operational including all

fire doors are in closed position and are not propped open, and the sprinkler system is still functional (i.e. valves are in the open position), if applicable.

- F. Fire Alarm Inoperable at End of Shift: If the fire alarm system is not operational at the end of the construction shift, provide a temporary, manual switch in the Cab to activate the stair ventilation system (ATCT's only).

3.8 TEMPORARY IGNITION SOURCES

- A. When construction activities involve the use of temporary ignition sources ("hot works"), i.e. welding, cutting, plumbers torch, etc., the Contractor shall provide, at a minimum, the following ILSM. (Note: Additional measures may be required by the Resident Engineer for specific situations.)

1. Inform construction supervisor of hazardous operations.
2. Keep a log of all hot work activities.
3. Provide the appropriate type fire extinguisher to the personnel performing the work (all construction personnel shall be trained in the proper use of fire extinguishers prior to the commencement of work).
4. Disable any fire alarm initiating devices or zones that may be susceptible to a false alarm during the operation. Notify the Resident Engineer prior to disabling fire alarm devices.
5. Return all fire alarm devices to normal operation at the completion of work. At the end of the shift, all fire alarm devices shall be returned to operational condition regardless of the status of the work.

3.9 STORAGE OF COMBUSTIBLES

- A. When construction activities involve the storage of an unusual amount of combustibles and/or combustible liquids within the facility, the Contractor shall provide, at a minimum, the following ILSM. (NOTE: The Specification addressed Contractor storage spaces and other limitations. Additional measures may be required by the Resident Engineer for specific situations.)

1. Submit a written request to the Resident Engineer requesting permission to store materials within the facility. The request shall indicate the proposed location, types and quantities of combustibles, MSDS sheets (if applicable), approximate duration of storage and proposed ILSM. The Resident Engineer will provide a copy of all requests to the FAA Safety and Environmental Compliance Manager.
2. Provide additional fire extinguishers appropriate for the anticipated hazard.
3. Ensure proper cleaning techniques are utilized in the storage area at the end of each shift. This includes cleaning all dust and waste materials, replacing lids on liquids, cleaning all spills, returning all flammable and combustible liquids to a flammable liquids storage locker.
4. Check throughout the storage area daily for exposed ignition sources. Any exposed ignition sources shall be repaired or removed from the storage area.

3.10 STAIR VENTILATION SYSTEM

- A. Conduct a meeting to inform all air traffic personnel upon restoring the stair ventilation system to normal operation.

END OF SECTION 02 01 00

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SECTION 02 03 00 – GENERAL REQUIREMENTS FOR DEMOLITION AND RENOVATION

PART 1 - GENERAL

1.1 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
- B. AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (AHRI)
 - 1. AHRI Guideline K (2005) Guideline for Containers for Recovered Non-Flammable Fluorocarbon Refrigerants
- C. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
 - 1. AASHTO M 145 (1991; R 2004) Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
 - 2. AASHTO T 180 (2001; R 2004) Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and an 457-mm (18-in) Drop
- D. AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE)
 - 1. ASSE/SAFE A10.6 (2006) Safety Requirements for Demolition Operations
- E. CARPET AND RUG INSTITUTE (CRI)
 - 1. CRI (2009) CRI Carpet Installation Standard
- F. U.S. ARMY CORPS OF ENGINEERS (USACE)
 - 1. EM 385-1-1 (2008) Safety and Health Requirements Manual
- G. U.S. DEPARTMENT OF DEFENSE (DOD)
 - 1. DOD 4000.25-1-M (2006; Notice 1) Requisitioning and Issue Procedures
- H. U.S. FEDERAL AVIATION ADMINISTRATION (FAA)
 - 1. FAA AC 70/7460-1 (Rev K) Obstruction Marking and Lighting
- I. U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
 - 1. 40 CFR 61 National Emission Standards for Hazardous Air Pollutants
 - 2. 40 CFR 82 Protection of Stratospheric Ozone
 - 3. 49 CFR 173.301 Shipment of Compressed Gases in Cylinders and Spherical Pressure Vessels

1.2 GENERAL REQUIREMENTS

- A. This Section specifies administrative and procedural requirements for demolition and renovation. Refer to other Sections for specific work requirements and limitations applicable to individual parts of the work. Requirements of this Section apply to all disciplines. Refer to specific Sections for other requirements and limitations applicable to the work.
- B. Do not begin demolition until authorization is received from the COTR/RE. Do not allow accumulations inside or outside the building. The work includes demolition and removal of resulting rubbish and debris. Remove rubbish and debris from Government property daily, unless otherwise directed. Store materials that cannot be removed daily in areas specified by the COTR/RE. In the interest of occupational safety and health, perform the work in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections.
- C. Protection of Existing Property: Before beginning any demolition work, the Contractor shall carefully survey the site and examine the drawings and specification to determine the extent of the work. The Contractor shall take all necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain in property of the Government, and any damaged items shall be repaired or replaced as approved by the COTR/RE at no additional cost to the Government. The Contractor shall carefully coordinate the work of this section with all other work and shall construct and maintain shoring, bracing and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work preformed under this contract.
- D. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
- E. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
- F. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the COTR/RE's opinion, reduce the building's aesthetic qualities or result in visual evidence of cutting and patching. Remove and replace work cut and patched in a visually unsatisfactory manner.

1.3 SUBMITTALS

- A. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:
 - 1. Demolition Plan

1.4 REGULATORY AND SAFETY REQUIREMENTS

- A. Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," conform to the safety requirements contained in ASSE/SAFE A10.6.

B. Notifications:

1. General Requirements: Furnish timely notification of demolition projects to the COTR/RE in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M.

1.5 DUST AND DEBRIS CONTROL

- A. Prevent the spread of dust and debris to occupied portions of the building and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Vacuum and dust the work area daily.

1.6 PROTECTION

A. Traffic Control Signs:

1. Where pedestrian, driver or aircraft safety is endangered in the area of removal work, use traffic barricades with flashing lights. Notify the COTR/RE prior to beginning such work.
2. Contractor must provide a minimum of 2 aviation red or high intensity white obstruction lights on temporary structures (including cranes) over 100 feet 30 meter above ground level. Light construction and installation must comply with FAA AC 70/7460-1. Lights must be operational during periods of reduced visibility, darkness, and as directed by the COTR/RE. Maintain the temporary services during the period of construction and remove only after permanent services have been installed and tested and are in operation.

- B. Items to Remain in Place: Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government. Repair or replace damaged items as approved by the COTR/RE. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition work. Repairs, reinforcement, or structural replacement require approval by the COTR/RE prior to performing such work.

- C. Existing Construction Limits and Protection: Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide temporary shoring and bracing for support of building components to prevent settlement or other movement. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove snow, dust, dirt, and debris from work areas daily.

- D. Weather Protection: For portions of the building to remain, protect building interior and materials and equipment from the weather at all times. Where removal of existing roofing is necessary to accomplish work, have materials and workmen ready to provide adequate and temporary covering of exposed areas.

- E. Trees: Protect trees within the project site which might be damaged during demolition, and which are indicated to be left in place. Replace any tree designated to remain that is damaged during the work under this contract with like-kind or as approved by the COTR/RE.
 - F. Utility Service: Maintain existing utilities indicated to stay in service and protect against damage during demolition and operations. Coordinate with COTR/RE for shutdown utilities.
 - G. Facilities: Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated on drawings, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, must remain standing without additional bracing, shoring, or lateral support until demolished or deconstructed, unless directed otherwise by the COTR/RE. Ensure that no elements determined to be unstable are left unsupported and place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.
 - H. Protection of Personnel: Before, during and after the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished or deconstructed and take immediate action to protect all personnel working in and around the project site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.
- 1.7 BURNING
- A. The use of burning at the project site for the disposal of refuse and debris will not be permitted.
- 1.8 RELOCATIONS
- A. Perform the removal and reinstallation of relocated items as indicated on drawings with workmen skilled in the trades involved. Items to be relocated which are damaged by the Contractor shall be repaired or replaced with new undamaged items as approved by the COTR/RE.
- 1.9 REQUIRED DATA
- A. Prepare a Demolition Plan. Include in the plan procedures for careful removal and disposition of materials to be reused, coordination with other work in progress, a disconnection schedule of utility services, a detailed description of methods and equipment to be used for each operation and of the sequence of operations. Include statements affirming Contractor inspection of the existing roof deck and its suitability to perform as a safe working platform or if inspection reveals a safety hazard to workers, state provisions for securing the safety of the workers throughout the performance of the work. Provide procedures for safe conduct of the work in accordance with EM 385-1-1. Plan shall be approved by COTR/RE prior to work beginning.
- 1.10 ENVIRONMENTAL PROTECTION
- A. Comply with the Environmental Protection Agency requirements specified.

1.11 USE OF EXPLOSIVES

- A. Use of explosives will not be permitted.

1.12 ASBESTOS CONTAINING MATERIALS (ACM)

- A. The flooring of some elevator cabs may contain ACM. It is the intent of this Specification to not disturb any cab flooring. If indicated in the site specific appendices, cab flooring shall be tiled over with new materials. Abatement of ACM shall not be required.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Prior to Cutting Existing Surfaces: Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
- B. Prior to Proceeding: Meet at the site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

- A. Provide temporary support of work to be cut. Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 EXISTING FACILITIES TO BE REMOVED

A. GENERAL

- 1. Existing construction scheduled to be removed for reuse shall be disassembled. Dismantled and removed materials are to be separated, set aside, and prepared as specified, and stored or delivered to a collection point for reuse.

2. Cutting and Patching:
 - a. Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - b. Cutting: Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition. Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible, review proposed procedures with the original installer; comply with original installer's recommendations. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 1) Avoid Marring Existing Surfaces: To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 2) Concrete and Masonry Surfaces: Cut through concrete and masonry using a cutting machine such as carborundum saw or diamond core drill.
 - 3) Utility Services: Bypass utility services such as pipe or conduit before cutting, where services are shown or required to be removed, relocated or abandoned. Remove pipe or conduit in walls or partitions that are noted to be removed, unless noted by Resident Engineer to be cut-off. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after bypassing and cutting. Use approved firestopping methods in all fire-rated walls, floors or ceilings.
 - c. Patch: Patch with durable seams that are as invisible as possible. Comply with specified tolerances. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 - d. Finish Restoration: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - e. Finish Restoration in More than One Area: Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - f. Smooth Painted Surfaces: Where patching occurs in a smooth painted surface, extend final paint coat over entire area containing the patch, after the patched area has received primer and second coat.
 - g. Existing Ceilings: Patch, repair or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance.
3. Items with Unique/Regulated Disposal Requirements: Remove and dispose of items with unique or regulated disposal requirements in the manner dictated by law or in the most environmentally responsible manner.

B. ARCHITECTURAL

1. Carpentry: Remove and reinstall components as whole units, complete with trim and accessories as indicated on drawings. Do not remove hardware attached to units, except for door closers unless noted otherwise in drawings. Brace the open end of door frames to prevent damage.
2. Carpet: Remove existing carpet in accordance with manufacturer recommendations. Remove adhesive according to recommendations of the Carpet and Rug Institute (CRI). Adhesive removal solvents shall comply with CRI 104.
3. Acoustic Ceiling Tile: Remove and store ceiling tiles to be reused if indicated on drawings.

C. STRUCTURAL

1. Miscellaneous Metal: When shop-fabricated items such as access doors and frames, steel gratings, metal ladders, metal railings, metal windows and similar items and light-gage and cold-formed metal framing, metal toilet partitions, toilet accessories and similar items will be reused, removed them as whole units and shall be store and protected from weather.

D. MECHANICAL

1. Mechanical Equipment and Fixtures: Disconnect mechanical hardware at the nearest connection to existing services to remain, unless otherwise noted. Mechanical equipment and fixtures must be disconnected at fittings. Remove service valves attached to the unit. Do not remove equipment until approved.
2. Piping: Disconnect piping at unions, flanges and valves, and fittings as required to reduce the pipe into straight lengths. If the piping that remains can become pressurized due to upstream valve failure, end caps, blind flanges, or other types of plugs or fittings with a pressure gage and bleed valve shall be attached to the open end of the pipe to ensure positive leak control. Carefully dismantle piping that previously contained gas, gasoline, oil, or other dangerous fluids, with precautions taken to prevent injury to persons and property.

E. ELECTRICAL

1. Electrical Equipment and Fixtures: Disconnect primary, secondary, control, communication, and signal circuits at the point of attachment to their distribution system.
 - a. Fixtures: Remove electrical fixtures as indicated on drawings.
 - b. Electrical Devices: Remove switches, switchgear, transformers, conductors including wire and nonmetallic sheathed and flexible armored cable, regulators, meters, instruments, plates, circuit breakers, panelboards, outlet boxes, and similar items as indicated on drawings.

- c. Wiring Ducts or Troughs: Dismantle plug-in ducts and wiring troughs into unit lengths. Remove plug-in or disconnecting devices from the busway as indicated on drawings.
- d. Conduit and Miscellaneous Items: Remove conduit except where embedded in concrete or masonry as indicated on drawings. Consider corroded, bent, or damaged conduit as scrap metal. Sort straight and undamaged lengths of conduit according to size and type. Classify supports, knobs, tubes, cleats, and straps as debris to be removed and disposed.

3.4 DISPOSITION OF MATERIAL

- A. Title to Materials: All materials and equipment removed shall become the property of the Contractor and shall be removed from Government property.
- B. Reuse of Materials and Equipment: Remove and store materials and equipment indicated to be reused to prevent damage, and reinstall as the work progresses.
- C. Disposal of Ozone Depleting Substance (ODS): Class I and Class II ODS are defined in Section, 602(a) and (b), of The Clean Air Act. Prevent discharge of Class I and Class II ODS to the atmosphere. Place recovered ODS in cylinders meeting AHRI Guideline K suitable for the type ODS (filled to no more than 80 percent capacity) and provide appropriate labeling. Recovered ODS shall be removed from Government property and disposed of in accordance with 40 CFR 82. Products, equipment and appliances containing ODS in a sealed, self-contained system (e.g. residential refrigerators and window air conditioners) shall be disposed of in accordance with 40 CFR 82.
 - 1. Special Instructions: No more than one type of ODS is permitted in each container. A warning/hazardous label shall be applied to the containers in accordance with Department of Transportation regulations. All cylinders including but not limited to fire extinguishers, spheres, or canisters containing an ODS shall have a tag with the following information:
 - a. Activity name and unit identification code.
 - b. Activity point of contact and phone number.
 - c. Type of ODS and pounds of ODS contained.
 - d. Date of shipment.
 - 2. Fire Suppression Containers: Deactivate fire suppression system cylinders and canisters with electrical charges or initiators prior to shipment. Also, safety caps must be used to cover exposed actuation mechanisms and discharge ports on these special cylinders.
- D. Transportation Guidance: Ship all ODS containers in accordance with MIL-STD-129, DLA 4145.25 (also referenced one of the following: Army Regulation 700-68, Naval Supply Instruction 4440.128C, Marine Corps Order 10330.2C, and Air Force Regulation 67-12), 49 CFR 173.301, and DOD 4000.25-1-M.

3.5 DISPOSAL OF REMOVED MATERIALS

- A. Regulation of Removed Materials: Dispose of debris, rubbish, scrap, and other materials resulting from removal operations with all applicable federal, state and local regulations as contractually specified.
- B. Burning on Government Property: Burning of materials removed from demolished structures will not be permitted on Government property.
- C. Removal to Spoil Areas on Government Property: Transport noncombustible materials removed from demolition structures to designated spoil areas on Government property.
- D. Removal from Government Property: Transport waste materials removed from demolished structures, from Government property for legal disposal. Dispose of waste soil as directed.

END OF SECTION 02 03 00

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SECTION 14 21 01 - ELECTRIC TRACTION ELEVATORS - REFURBISHMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes electric traction passenger/service elevator refurbishment and a temporary construction elevator for MIA only.
- B. Refer to Appendices A & B for site specific requirements.

1.2 DEFINITIONS

- A. Definitions in ASME A17.1 apply to work of this Section.
- B. Defective Elevator Work: Operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.
- C. Service Elevator: A passenger elevator that is also used to carry freight.

1.3 SITE VISIT

- A. Coordinate site visit with Contracting Officer.

1.4 UTILITIES/STORAGE AREA

- A. Water, electricity and sanitary facilities are available for the Contractor's use. Public telephone service is not available. Storage space for materials and equipment is limited on the site. The contractor shall limit on-site storage to no more than 2 parking spaces.

1.5 PERFORMANCE TIME

- A. The Contractor shall complete the repairs to the elevator equipment within 90 calendar days after Notice-To-Proceed. The time required for the Government to review, comment and approve the submittals, and equipment ordering lead-time will not be included in the Contractor's performance time. Notice-To-Proceed with the construction phase will not be granted until the Contractor certifies to the Contracting Officer that all required materials and equipment, as approved by the Government, are in his possession and ready for installation.

1.6 SCHEDULE OF WORK

- A. The Contractor shall provide a complete and comprehensive schedule to the Technical Contact and Site Contact for review and approval before a Notice-To-Proceed is issued. Schedule shall outline all phases of the work and their impact on the operation of the elevator. All work shall be performed during normal daytime hours from 7:30 AM to 4:00 PM unless otherwise scheduled in advance and approved by the R.E. Outages shall be held to a minimum number and a minimum of time. Double shifts should be included if necessary to accomplish the refurbishment in accordance with the time constraints specified herein. If necessary, outages shall be scheduled to occur during periods of low air traffic activity during night time hours.
- B. Since the elevator is the main form of transportation to the air traffic control CAB, the contractor shall establish manual elevator service during shift changes (morning and evening, times to be determined at pre-construction meetings, for no less than 30 minutes, seven (7) days a week. It is recognized that some work will require the complete loss of elevator service. Critical events, such as these, shall be performed in parallel and coordinated in order to minimize the interruption to the facility. Complete loss of elevator service will be limited to twenty (20) calendar days.
- C. If the contractor determines that the work cannot be accomplished in the time and schedule specified herein, the contractor's proposal shall be accompanied by a proposed schedule, for review by FAA that delineates the various phases of the work and identifies the periods of time that the elevator will be out of service. The contractor should consider working two shifts or extended shifts in order to minimize the length of time that the elevator will be out of service.

1.7 SAFETY

- A. All fall protection and safety equipment installation shall be coordinated with the FAA Resident Engineer and in compliance with latest OSHA standards. A fall protection plan shall be submitted to the SSC Contact and the Technical Contact before starting work.

1.8 SUBMITTALS

- A. Product Data: Include capacities, sizes, performances, operations, safety features, finishes, and similar information. Include product data for the following:
 - 1. Any component replaced or refurbished.
- B. Shop Drawings: Component and/or system information drawings, product information, diagrams, schedules, or brochures showing configuration, installation, and replacement part numbers for future maintenance operations.
- C. Samples for Initial Selection: For finishes involving color selection.
- D. Manufacturer Certificates: Signed by elevator manufacturer certifying that hoistway, pit, and machine room layout and dimensions, as shown on Drawings, and electrical service, as shown and specified, are adequate for elevator components being replaced.

- E. Qualification Data: For Installer, provide evidence of satisfactory completion of elevator refurbishment projects of similar size and scope within the last five years. Provide list of references, including contact names, addresses, phone numbers and brief summary of projects completed and in service dates.
- F. Operation and Maintenance Data: For components to be included in existing emergency, operation, and maintenance manuals.
 - 1. In addition to items specified in Section 01 10 00 "INSTRUCTION MANUALS," include diagnostic and repair information available to manufacturer's and Installer's maintenance personnel.
- G. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use. Authorities Having Jurisdiction (AHJ) include NEIS inspector.
- H. Warranty: Special warranty specified in this Section.
- I. Continuing Maintenance Proposal: Service agreement specified in this Section.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: Elevator manufacturer or manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain components through one source from a single manufacturer.
 - 1. Provide major elevator components, including driving machines, controllers, signal fixtures, door operators, car frames, cabs, and entrances, manufactured by a single manufacturer.
- C. Regulatory Requirements: Comply with ASME A17.1.
- D. Accessibility Requirements: Comply with Section 407 in the U.S. Access Board's "Americans With Disabilities Act and Architectural Barriers Act Accessibility Guidelines."
- E. Fire-Rated Hoistway Entrance Assemblies: Door and frame assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252 or UL 10B.

1.10 DEMOLITION

- A. Any equipment obstructing the Contractor's access to the work area shall either be temporarily relocated by the Contractor to a storage area designated by the R.E. or be covered in a manner as to provide suitable access while protecting the Government property from construction damage. At the completion of all work, the Contractor shall return all such items to their original location.

- B. Any unused conduit, wire, elevator equipment, structural supports or other fittings associated with equipment or devices to be removed under this contract shall be disposed by the contractor.
- C. Remove unused structural support angles, channels, bolts, and similar hardware. Patch any holes resulting from removed equipment, hardware, conduit or pipe with the same material as that of the penetrated surface (i.e.: concrete floor openings shall be filled with concrete). Paint patch to match adjacent undisturbed surface.
- D. Any equipment or material to be removed, unless specified to remain the property of the FAA, shall become the property of the Contractor and shall be transported from the site and disposed in a legal manner.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials, components, and equipment in manufacturer's protective packaging.
- B. Store materials, components, and equipment off of ground, under cover, and in a dry location. Handle according to manufacturer's written recommendations to prevent damage, deterioration, or soiling.

1.12 COORDINATION

- A. Coordinate installation of sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.
- B. Coordinate sequence of elevator refurbishment with other work to avoid delaying the Work.
- C. Coordinate locations and dimensions of other work relating to electric traction elevators including entrance subsills; and electrical service, electrical outlets, lights, and switches in pits and machine rooms, or hoistways.

1.13 WARRANTY

- A. Special Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to repair, restore, or replace defective elevator work within specified warranty period.
 - 1. Warranty Period: One year from date of NEIS Acceptance.

1.14 INSTRUCTION MANUALS

- A. Refer to Section 01 10 00.

1.15 TRAINING

- A. Refer to Section 01 10 00.

1.16 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide one year's full maintenance service by skilled employees of elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
 - 1. Include 24-hour-per-day, 7-day-per-week emergency callback service.
 - a. Response Time: Two hours or less.
- B. Continuing Maintenance Proposal: Refer to Section 01 10 00.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Existing Manufacturer: The original elevator manufacturer may be one of the following:
 - 1. Dover
 - 2. Westinghouse
 - 3. Lowery
 - 4. Montgomery
 - 5. Southern
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Fujitec America, Inc.
 - 2. KONE Inc.
 - 3. Otis Elevator Co.
 - 4. Schindler Elevator Corp.
 - 5. ThyssenKrupp Elevator.
- C. Manufacturers for temporary construction elevator (for MIA only): Subject to compliance with requirements, provide products by one of the following:
 - 1. GEDA USA.
 - 2. Metro Elevator Company, Inc.
 - 3. Alimak Hek Inc.
 - 4. PEGA Hoist.

2.2 SYSTEMS AND COMPONENTS

- A. General: Provide manufacturer's standard elevator systems. Where components are not otherwise indicated, provide standard components published by manufacturer as included in standard pre-engineered elevator systems and as required for complete system.
- B. Refer to Appendices A & B for site specific requirements.

2.3 OPERATION SYSTEMS

- A. General: Upgrade manufacturer's standard microprocessor operation system as required to provide type of operation system in use at the current facility.

2.4 FINISHES

- A. General: Match existing finishes; provide samples of material options to RE.

2.5 TEMPORARY CONSTRUCTION ELEVATOR (FOR MIA ONLY)

- A. Provide a temporary construction elevator including foundation, structural support tower, hoist motor, enclosed passenger cab, base fence enclosure, temporary power connection, control and limit switches, safety over speed governor, etc. for a complete installation and operational elevator during the entire time the regular tower elevator is out of service.
- B. Provide services of a licensed structural engineer, and submit for review, a design for the foundations for the temporary elevator support structure complying with the requirements of the local authority having jurisdiction.
- C. Provide removal, storage and re-installation of existing precast panels at top landing area for the temporary elevator. Restore finish and weather proofing in the area affected by the temporary landing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Examine hoistways, hoistway openings, pits, and machine rooms as constructed; verify critical dimensions; and examine supporting structure and other conditions under which elevator work is to be installed.
 - 1. For the record, prepare a written report, endorsed by Installer, listing dimensional discrepancies and conditions detrimental to performance or indicating that dimensions and conditions were found to be satisfactory.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions.
- B. Install temporary elevator on foundations; erect support structure bracing, per the approved submittals, to the exterior of the existing ATCT (MIA only).
- C. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualifications of welding operators.
- D. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts designed to minimize transmission of vibrations to structure and thereby minimize structure-borne noise from elevator system.
- E. Lubricate operating parts of systems, including ropes, as recommended by manufacturers.
- F. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with car. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.
- G. Leveling Tolerance: 1/8 inch, up or down, regardless of load and direction of travel.
- H. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.
- I. Locate hall signal equipment for elevators as follows, unless otherwise indicated:
 - 1. For groups of elevators, locate hall push-button stations between two elevators at center of group or at location most convenient for approaching passengers.
 - 2. Place hall lanterns either above or beside each hoistway entrance.
 - 3. Mount hall lanterns at a minimum of 72 inches above finished floor.

3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: On completion of elevator installation and before permitting use (either temporary or permanent) of elevators, perform acceptance tests as required and recommended by ASME A17.1 and by governing regulations and agencies.
- B. Operating Test: Load elevator to rated capacity and operate continuously for 30 minutes over full travel distance, stopping at each level and proceeding immediately to the next. Record temperature rise of elevator machine during 30-minute test period. Record failure to perform as required.
- C. Advise FAA, Architect, and authorities having jurisdiction in advance of dates and times tests are to be performed on elevators.

3.4 PROTECTION

- A. Temporary Use: Comply with the following requirements for elevator used for construction purposes:
1. Provide car with temporary enclosure, either within finished car or in place of finished car, to protect finishes from damage.
 2. Provide strippable protective film on entrance and car doors and frames.
 3. Provide padded wood bumpers on entrance door frames covering jambs and frame faces.
 4. Provide other protective coverings, barriers, devices, signs, and procedures as needed to protect elevator and elevator equipment.
 5. Do not load elevators beyond their rated weight capacity.
 6. Engage elevator Installer to provide full maintenance service. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as necessary for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
 7. Engage elevator Installer to restore damaged work, if any, so no evidence remains of correction. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train FAA's maintenance personnel to operate, adjust, and maintain elevators.
- B. Check operation of elevators with FAA's personnel present and before date of Substantial Completion. Determine that operation systems and devices are functioning properly.
- C. Check operation of elevators with FAA's personnel present not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

END OF SECTION 14 21 01

SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

Items not shown in detail or covered by detailed specifications shall be as set forth in the National Electrical Code.

1. Conduit And Fittings: All conduit located inside the building shall be electric metallic tubing (EMT) with compression ring type fittings. EMT is permitted above 8 feet or in protected spaces such as shafts only. All other should be RGS. All conduit located outside the building shall be rigid steel with threaded fittings. Conduit below ground shall be rigid steel with a factory applied plastic coating. Flexible conduit, both inside and outside, shall be metallic. Flexible conduit located outside shall be liquid tight. Flex conduit shall be used for equipment whips only and shall be limited to 6 feet maximum.

Conduits shall be installed parallel or at right angles to the building lines. Conduits shall be securely supported and fastened in place at intervals of not more than 5 feet and at each change in direction. Support the conduit from building structural steel, walls, or other R.E. approved structural components. Fasteners shall be conduit hangers or one-hole malleable iron pipe straps with appropriate screws or bolts for the surface material. Conduits shall not be supported from metal roof decking. Suspended ceiling support wires shall not be used for the support of conduits. Changes in direction shall be symmetrical bends or cast-metal fittings. Each conduit entrance to outlet boxes, panel boards, and equipment cabinets shall be fitted with a lock nut and insulated throat connector.

2. Wire: All wire shall have copper conductors. Size shall be American Wire Gauge (AWG) with size for power circuits, but not smaller than #12 AWG. Size for all control circuit wiring shall be #16 AWG. Power wire #10 AWG and smaller shall be solid; #8 and larger wire, and all control wire, shall be stranded. Insulation shall be type THW or THWN for power wire and type MTW for control wire and shall be color coded as follows:

<u>Single Phase</u>		<u>Three Phase</u>	
<u>120 Volts</u>	<u>208/240 Volts</u>	<u>120/208 or 240 Volts</u>	<u>277/480 Volts</u>
Line-Black	Line 1-Black	Phase A-Black	Phase A-Yellow
Neutral-White	Line 2-Red	Phase B-Red	Phase B-Brown
	Neutral-White	Phase C-Blue	Phase C-Orange
		Neutral-White	Neutral-White

All Circuits:

Ground	Green
Control	Black with numbered adhesive markers on both ends or multiconductor with unique continuous color coded insulation

Power wires #8 and smaller shall have continuous colored insulation. Wires #6 and larger may utilize continuous colored insulation or colored tape. Where conductors are color coded with tape, they shall be half lapped for a minimum length of 3 inches in all junction and pull boxes, accessible raceways, panel boards, outlets, switches and equipment cabinets.

All wire shall be continuous; no splices will be permitted unless otherwise specified. Where permitted, splices shall be accomplished with compression type connectors bonded to the wire with a crimping tool and procedure approved by the connector manufacturer.

Wires shall not be installed until all conduit and fittings are in place. All wires shall be drawn into conduit simultaneously and with adequate lubricating compound to prevent damage to insulation.

Control wiring installed within control panels shall be neatly routed between the control components and shall run parallel and perpendicular to the sides of the panel. Wires which run diagonally from component to component will not be acceptable. Wiring shall have sufficient slack to prevent tension on the termination connector. Route wires between components in the most direct path possible without overshoots and loop-backs. Wires shall be run in open slot wiring duct (Thomas & Betts model 91XXX, or an approved substitution with size as required for application.) or bundles of wires shall be neatly secured with nylon self-locking cable ties. Terminate all control wires with spade type, crimped terminals; Exception: Devices such as relays and terminal blocks which utilize clamp type terminals will not be required to have crimped terminals on the wire. Wrapping of wires around screw heads will not be acceptable. All wires exiting the control panel shall terminate on a screw terminal block with each terminal marked the same as on the control schematic on the project drawings.

3. Grounding: All non-current carrying metallic parts of the electrical system shall be grounded with an insulated wire sized and installed in accordance with Article 250 of the National Electrical Code. Ground wire shall be connected to ground bus in each power panel, to ground lug on receptacles, and to enclosure or frame of major electrical devices such as safety switches, motors, motor starters, terminal cabinets, light fixtures, etc. Connection of wire to these devices shall be with a separate machine screw and nut which bonds to a clean, bare metal surface. Self tapping screws are not acceptable for this purpose. Screws which are used for support of the enclosure shall not be used for this purpose. Use full size neutrals for every OPD.

4. Safety Switches: Safety switches shall be NEMA rated as heavy duty. Enclosures shall be NEMA type 1 in indoor locations and NEMA type 3R in outdoor or damp locations to be a different type for the specific application. Switches shall be of the number of poles, voltage and amperage ratings shown on the project drawings. Furnish fuse clips to receive cartridge type dual element fuses in all poles if fusible switches are required on the project drawings. Switches shall be the quick-make, quick-break type with visible blades. Switch handles shall be the extended arm type for easy identification of position. Switches which utilize rocker arm type handles or have concealed blades are not acceptable. Switch handles shall be capable of being secured in both the on and off positions by use of a Government owned and installed padlock with a 5/16" diameter shackle. The switch cover shall also be capable of being secured in the closed position with a separate Government owned and installed padlock with a 5/16" diameter shackle. The Contractor shall modify the switch as required to achieve these locking capabilities. The switch shall be grounded with a separate grounding bushing secured to the enclosure's bare metal with a bolt and nut. The use of the neutral bus inside the switch with, or without, a grounding electrode screw bonded to the enclosure will not be allowed as a satisfactory enclosure ground. A brand name safety switch known to meet the salient characteristics of this specification is Square D, Class 3110, Heavy Duty. Label switch.

1.1 SUMMARY

A. General:

1. Materials and equipment shall comply with all requirements of the contract documents. Materials furnished by the Contractor shall be new, the standard products of manufacturers regularly engaged in the production of such materials, and of the manufacturer's latest designs that comply with the specification requirements.
2. If material and equipment requirements conflict, the order of precedence for selection shall be as follows: special contract provision, this specification, the contract drawings; and then in continuing order of precedence, military specifications, federal specifications, NFPA publications, IEEE standards, UL standards and NEMA standards. Wherever standards have been established by Underwriters Laboratories, Inc., the material shall bear the UL label.

1.2 REFERENCES

A. FAA Orders and Standards:

- | | |
|-------------------|--|
| 1. FAA-STD-1217f, | Electrical Work, Interior |
| 2. FAA-STD-1391B | Installation and Splicing of Underground Cables |
| 3. FAA-STD-019e, | Lightning and Surge Protection, Grounding,
Bonding and Shielding Requirements for
Electronic Equipment |

B. National Fire Protection Association (NFPA)

- | | |
|-------------|---|
| 1. NFPA 70, | National Electrical Code. |
| 2. NFPA 110 | Standard for Emergency and Standby Power
Systems |

C. Institute of Electrical and Electronic Engineers (IEEE)

- | | |
|-----------------|--|
| 1. IEEE C2 | National Electrical Safety Code |
| 2. IEEE Std 100 | Dictionary of Electrical and Electronics Terms |

D. National Electrical Manufacturers Association (NEMA)

- | | |
|-------------------|--|
| 1. NEMA C57.12.28 | Pad-Mounted Equipment - Enclosure Integrity |
| 2. NEMA ICS 6 | Industrial Control and Systems Enclosures |
| 3. NEMA MG 1 | Motors and Generators |
| 4. NEMA MG 10 | Energy Management Guide for Selection and
Use of Fixed Frequency Medium AC Squirrel-
Cage Polyphase Induction Motors |
| 5. NEMA MG 11 | Energy Management Guide for Selection and
Use of Single-Phase Motors |

1.3 SEQUENCING AND SCHEDULING

- ### A. Coordinate electrical equipment installation with other building components.

1. Arrange for chases, slots and openings in building structure during progress of construction to allow for electrical installations.
2. Coordinate installing required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
3. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the work. Coordinate installing large equipment requiring positioning prior to closing in the building.
4. Coordinate connecting electrical service to components furnished under other Sections.
5. Coordinate connecting electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.
6. Coordinate requirements for access panels and doors where electrical items requiring access are concealed by finished surfaces.
7. Coordinate installing electrical identification after completion of finishing where identification is applied to field-finished surfaces.
8. Coordinate installing electrical identifying devices and markings prior to installing acoustical ceilings and similar finishes that conceal such items.

B. Interruption of Power:

1. Contractor is advised that the project site is located at a fully operational airport. Unscheduled power interruptions to any of the electrical distribution systems is not allowed. Work requiring a temporary or permanent de-energizing of the electrical service shall be scheduled and approved in writing by the Contracting Officer's Technical Representative at least 14 calendar days in advance of performance of the work. Work may not commence until written authorization is received from the Contracting Officer's Technical Representative.

PART 2 - PRODUCTS

2.1 ELECTRICAL IDENTIFICATION

- A. Manufacturer's Nameplate: Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION REQUIREMENTS

- A. Comply with NECA 1.
- B. All materials and equipment shall be installed in accordance with the contract drawings. Where manufacturer's recommended installation methods conflict with the contract requirements, difference shall be resolved by the Contracting Officer's Technical Representative. The installation shall be accomplished by skilled workers regularly engaged in this type of work. Where required by local regulation, the workers shall be properly licensed. Install components and equipment to provide the maximum possible headroom where mounting heights or other location criteria are not indicated. Install items level, plumb, and parallel and perpendicular to

other building systems and components, except where otherwise indicated. Install equipment to facilitate service, maintenance and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations. Give right of way to raceways and piping systems installed at a required slope.

3.2 INSTALLATION

- A. The rules, regulations, and reference documents indicated shall be considered as minimum requirements and shall not relieve the Contractor from furnishing and installing higher grades of materials and workmanship than are specified or when required by the contract drawings. Equipment shall be installed in a manner to provide proper working space, access, and space for removal of the equipment to suit intended application.
- B. Contract Requirements:
 - 1. Furnish and install equipment, material and labor for a complete and proper installation. Ensure that electrical and communications work is coordinated and compatible with Architectural, Mechanical, Structural, and Civil work.
- C. Firestopping:
 - 1. Apply to cable and raceway penetrations of fire-rated floor and wall assemblies. Perform firestopping to re-establish the original fire resistance rating of the assembly at the penetration.
- D. Wiring Methods:
 - 1. All wiring shall consist of insulated copper conductors installed in metallic raceways, unless otherwise specified.
- E. Conductor Routing:
 - 1. Panelboards, surge arresters, disconnect switches, etc., shall not be used as a raceway for conductor routing other than conductors that originate or terminate in these enclosures. Isolated ground conductors will be allowed to traverse these enclosures.
- F. Conductor Separation:
 - 1. Power conductors shall be routed separately from all other conductor types. Route power conductors and other conductors in separate raceways, or by a metallic divider between the power conductors and the other conductors in the same raceway. 480Y/277V power cables shall be in separate raceways from 208Y/120V power cables.
- G. Neutral Conductor:
 - 1. Shared/common neutrals shall not be permitted (i.e., each overcurrent device shall have its own separate neutral conductor). Neutral conductor sizes shall not be less than the respective feeder or phase conductor sizes.
- H. Ground Conductor:

1. Shared/common grounding conductors shall not be permitted (i.e., each overcurrent protective device shall have its own separate ground conductor). The equipment grounding conductor shall be installed in the same conduit as its related branch and feeder conductors and shall be connected to the ground bus in the branch or distribution panelboard. Equipment ground conductor shall be the same size as the phase conductors were indicated for special equipment branch or feeder circuits that require parity sized ground conductors to comply with equipment manufacturer's recommendations.

I. Separation:

1. Where power and control cables share the same manhole, they shall be installed on opposite sides of the manhole. The entire exposed length of control, telephone and signal cables shall be fireproofed by applying a 1/4-inch minimum thickness of arc-proofing. Known acceptable source is 3M No. 7700 or approved equal.

J. Cable Terminations:

1. Provide terminations in accordance with this Section and manufacturer's requirements. All splices (including those in the building) must be approved by the Contracting Officer's Technical Representative.

3.3 DEMOLITION

- A. Protect existing electrical equipment and installations when performing new work. If damaged or disturbed in the course of the work, remove damaged portions and install new products of equal capacity, quality, and functionality. Remove demolished material from the project site. Remove, store, clean, re-install, reconnect, and make operational components indicated for relocation.

B. Accessible Work:

1. Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.

C. Abandoned Work:

1. Cut and remove buried raceway and wiring, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish. All wire not removed shall have the Contracting Officer's Technical Representative's written approval.

3.4 CUTTING AND PATCHING

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for electrical installations. Perform cutting by skilled mechanics of the trades involved. Repair disturbed surfaces to match adjacent undisturbed surfaces.

3.5 FIELD TESTING

- A. Perform tests necessary to establish the adequacy, quality, safety, completed status, and suitable operation of each system. Repair or replace equipment that does not meet test requirements and

retest. Tests shall be scheduled and approved in writing by COTR at least 21 calendar days prior to conducting tests. Unless otherwise indicated, the Contractor shall furnish all test instruments, materials, and labor necessary to perform tests designated in Division 26 Sections. All tests shall be performed in the presence of the Contracting Officer's Technical Representative. All instruments shall have been calibrated within a period of 1 year preceding testing. Calibrations shall be traceable to applicable industry recognized standards.

END OF SECTION 26 05 00

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SECTION 26 43 13 - TRANSIENT-VOLTAGE SUPPRESSION FOR LOW-VOLTAGE ELECTRICAL
POWER CIRCUITS

PART 1 - GENERAL

1.1 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications listed below are referenced as the latest edition published as of the date of this document. The publications are referred to within the text by the basic designation only.

1. American National Standards Institute/ Institute of Electrical and Electronics Engineers/(ANSI/IEEE)
 - a. C62.41 Guide for Surge Voltages in Low Voltage AC Power Circuits
 - b. C62.45 Standard for Testing Procedures and Practices
2. FAA Specifications and Standards
 - a. FAA-STD-19e Lightning Protection, Grounding, Bonding and Shielding Requirements for Facilities
3. National Electrical Manufacturers Association (NEMA)
 - a. NEMA LS1 Low Voltage Surge Protective Devices
4. National Fire Protection Association (NFPA)
 - a. NFPA 70 National Electrical Code
5. Occupational Safety and Health Administration (OSHA)
 - a. 29 CFR 1910.7 Definitions and Requirements for a Nationally Recognized Testing Laboratory (NRTL)
6. Underwriters Laboratories (UL)
 - a. UL 1283 Electromagnetic Interference Filters
 - b. UL 1449 Transient Voltage Surge Suppressors
 - c. UL 486A Wire Connectors and Soldering Lugs for Use with Copper Conductors
 - d. UL 67 Panelboards

1.2 SUMMARY

This Section includes transient voltage surge suppressors for low-voltage circuits and equipment. Switchgear, panelboard and motor control center mounted suppressors are included.

- A. Transient Voltage Surge Suppressors (TVSS): Surge protection of AC electrical circuits and systems from the effects of lightning induced currents/voltages, substation switching transients and internally generated transients resulting from inductive and/or capacitive load switching and radio frequency/electromagnetic interference. Suppression protection for building service entrance as indicated on drawings. Surge protection for all circuits sensing, powering, and controlling devices located or mounted external to the building. The unit shall provide effective high-energy transient voltage suppression, surge current diversion, high-frequency electrical line noise attenuation, and line control in C62.41 environments.
- B. Incoming Secondary Electrical Service: The incoming secondary electrical service entrance conductors shall terminate at the main secondary switchgear's MCB and it shall be protected with a class C3 transient voltage surge suppressor (TVSS)/surge protection device (SPD). The TVSS/SPD device(s) shall be installed as close as possible to the service entrance overcurrent protection device (OCPD) they serve and in accordance with the manufacturer's instructions. All essential power and critical power panelboards and all panelboards supplying exterior circuits such as obstruction lights, exterior convenience outlets, guard shacks, electrical gates, and feeds to other facilities shall be protected by a Class C3 TVSS/SPD installed as close as possible to the panelboard they serve and in accordance with the manufacturer's instructions. Downstream normal utility panelboards as indicated on the drawings shall be protected by a Class B TVSS/SPD installed as close as possible to the panelboards they serve and in accordance with the manufacturer's instructions.
- C. National Airspace System (NAS) Facilities: Surge protective devices shall be installed on all critical and essential panels providing service to NAS operational equipment or supplying exterior circuits. SPDs shall be selected in accordance with the guidance provided in C62.41 and meet the requirements of UL 1449. Devices for panels serving exterior circuits shall be tested for a level C3 application per C62.41. The conduit or conduit nipple connecting the SPD enclosure to the panel enclosure shall be sealed with duct seal or other nonflammable medium to prevent soot from entering the enclosure in the event of SPD failure. The use of potting material in SPDs is strictly prohibited. All SPD components must be accessible for inspection by qualified FAA personnel. The maximum (MCOV) for SPDs located at branch and distribution panels shall be equal to or greater than the maximum (MCOV) of those located at the facility service.
- D. Electronic Equipment Power Lines: Surge protection devices, components or circuits for protection of electronic equipment power lines shall be provided as an integral part of all electronic equipment. These devices shall be positioned at the AC power conductor entrance to electronic equipment provided as part of the facility. Transient protection shall be provided on all combinations of L-L, L-G, L-N and N-G. SPDs at equipment shall provide a clamping level less than the equipment susceptibility level. Electronic equipment that is to be installed outside of facilities shall also require protection to the level supplied for the facility. Electronic equipment, such as radars, nav aids, transmitters supplied as part of the facility, shall be provided with transient protection that shall reduce surges and transients of 2.5 times the normal operating voltage of 600 volts whichever is larger, to below the equipment susceptibility level. The equipment susceptibility level is defined as the transient level on the signal, control or data line that may cause damage, degradation, or upset to electric circuitry connected to the line. The electronic equipment manufacturer shall perform tests to determine the voltage, current or energy levels that will cause immediate damage to components, shorten its operating life or cause operational upset. These tests shall consider all electrical and electronic equipment components exposed to the effects or surges or transients. The combined facility and equipment

entrance protection shall be coordinated to limit transients at the equipment to below the equipment susceptibility level. In all cases the following characteristics shall be evaluated.

1. Component damage threshold. The damage threshold is the transient level that renders the component nonfunctional or operationally deficient. For solid-state components, voltage is usually the relevant parameter.
 2. Component degradation level is the transient voltage or energy level that shortens the useful life of the component.
- E. Operational Upset Level: The operational upset level is the transient voltage or energy level that causes an unacceptable change in operating characteristics for longer than 10 milliseconds for analog equipment or a change of logic state for digital equipment.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00, "SUBMITTAL PROCEDURES."

A. Shop Drawings

1. Electrical One-Line Diagram
2. Show locations of each unit installation point.
3. Wiring Diagrams
4. Elementary or schematic. Single-line diagram of TVSS showing connections between TVSS power source and load plus any interlocking provisions, operation and maintenance data.

B. Product Data

1. Each suppressor category type
2. Submit product descriptions indicating dimensions for each suppressor type and mounting arrangement with required hardware conductor.

C. Test Reports

1. UL certified test data
2. Provide third party testing documentation demonstrating that the device will survive the published maximum surge current rating. Test reports will clearly show that the tests were performed on a COMPLETE device including all necessary fuses, thermal disconnects and monitoring systems.
3. Provide data demonstrating that the device is capable of surviving the specified number of C62.41 Category C3 (10kA) impulses without failure or performance degradation of more than 10 percent.
4. Provide UL 1449 reports as certified by UL. The report shall also include any "Engineering Considerations".
5. Provide a COMPLETE test package per the requirements of NEMA LS1.
6. Field Test Reports
7. Indicate and interpret results for compliance with performance requirements.

D. Operation and Maintenance Data

1. Transient Voltage Surge Suppressors

E. Closeout Submittals

1. Warranties
2. Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Perform work to meet or exceed the requirements of NFPA 70 and other applicable statutes, ordinances, codes and regulations of Government authorities having jurisdiction. Notify the Contracting Officer's Technical Representative of known or probable code violations discovered during subcontractor performance. Do not proceed with the work until violations have been resolved.
- B. Listed and Labeled: Provide electrically operated equipment specified in this Section that is listed and labeled. The terms "listed" and "labeled" as defined in NFPA 70, Article 100.
- C. Listing and Labeling Agency Qualifications: A Nationally Recognized Testing Laboratory as defined in 29 CFR 1910.7.
- D. Manufacturer's Qualifications: Surge suppression devices manufactured by a company engaged in the design, development, and manufacture of surge suppression devices for the protection of electrical circuits and electronic equipment with such products in satisfactory use in similar service for not less than 5 years.
- E. Regulatory Requirements: For the purposes of this Specification, IEEE Category C and B locations, shall assume a maximum voltage amplitude of 20 kilovolts and a maximum current amplitude to 10 kiloamperes. Comply with UL 1449.

1.5 WARRANTY

- A. Special Warranty: Special warranties specified in this Article shall not deprive the FAA of other right FAA may have under other provisions of the contract documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the contract documents.
- B. General Warranty: A written warranty, executed by manufacturer, agreeing to repair or replace components of transient voltage surge suppressors that fail in materials or workmanship within the specified period. Warranty period shall be 5 years from date of final acceptance by the FAA. Should suppressors be destroyed by surge(s) or transients, free replacement shall apply during the warranty period.

1.6 MAINTENANCE

- A. Surge suppressor manufacturer shall provide replacement unit or factory certified service and repair for surge suppressor units within 24 hours from time of notification.

PART 2 PRODUCTS

2.1 SUPPRESSOR CRITERIA-SERVICE ENTRANCE SWITCHGEAR, AND PANELBOARDS SERVING EXTERIOR OR ESSENTIAL BUILDING LOADS

- A. Suppressors shall utilize solid-state components that operate bi-directionally. The suppressor shall be factory-mounted in the device by the equipment manufacturer. Provide integral disconnecting means with current limiting fuses and a surge counter integral to the TVSS. The UL 1449 clamping voltages listed below includes the phase fuses.
- B. Service Entrance Suppressor: As defined in C62.41, Category 3.
- C. Three-Phase, Three-Wire Configuration: Provide independent suppression elements connected line-to-ground (L-G) and line-to-line (L-L).
- D. Three-Phase, Four-Wire Configuration: Provide independent suppression elements connected line-to-ground (L-G), line-to-neutral (L-N), and neutral-to-ground (N-G).
- E. Metal Oxide Varistors (MOVs): Use as suppression elements, each individual MOV must be rated for a minimum of 115 percent of nominal operating voltage.
- F. Turn-On/Turn-Off Times: Suppressors shall have turn-on and turn-off times of less than 1-nanosecond for each element, less than 5 nanoseconds for each system.
- G. 480 Volt Delta Connected Suppressor Criteria: Line-to-line and line-to-ground maximum single impulse current rating of 160,000 amps (8 x 20 microsecond waveform). Pulse life rating of 10,000 amperes (8 x 20 microsecond waveform) with 1,500 occurrences in accordance with FAA-STD-19e. Maximum clamping voltage and current rating when subjected to waveform with 1.2 by 50 microsecond, 20kV open circuit voltage and 8.0 by 20 microsecond, 10kA short circuit current.

SYSTEM VOLTAGE DELTA CONNECTED CLAMPING VOLTAGE L-L

480 volts

1,500 volts

- H. 480Y/277 Volt Wye Connected Suppressor Criteria: Line-to-neutral maximum single impulse current rating of 160,000 amps (8 x 20 microsecond waveform). Line-to-ground maximum single impulse current rating of 160,000 amps (8 x 20 microsecond waveform). Neutral-to-ground maximum single impulse current rating of 160,000 amps (8 x 20 microsecond waveform). Pulse life rating of 10,000 amperes (8 x 20 microsecond waveform) with 1,500 occurrences in accordance with FAA-STD-19e. Maximum clamping voltage and current rating when subjected to waveform with 1.2 by 50 microsecond, 20kV open circuit voltage and 8.0 20 microsecond, 10kA short circuit current.

SYSTEM VOLTAGE WYE CONNECTED CLAMPING VOLTAGES
L - N L - G N - G

480Y/277 Volts

900V

900V

900V

I.

208Y/120 Volt Wye Connected Suppressor Criteria: Line-to-neutral maximum single impulse current rating of 160,000 amps (8 x 20 microsecond waveform). Line-to-ground maximum single impulse current rating of 160,000 amps (8 x 20 microsecond waveform). Neutral-to-ground maximum single impulse rating of 160,000 amps (8 x 20 microsecond waveform). Pulse life rating of 10,000 amperes (8 x 20 microsecond waveform) with 1,500 occurrences in accordance with FAA-STD-19e. Maximum clamping voltage and current rating when subjected to a waveform with 1.2 by 50 microsecond, 6kV open circuit voltage, and 8.0 by 20 microsecond, 3kA short circuit current.

SYSTEM VOLTAGE WYE CONNECTED

CLAMPING VOLTAGES

L - N

L - G

N - G

208Y/120 Volts

400V

400V

400V

J.

Indication of Proper Connection and Operation: Provide visible indication of proper suppressor connection and operation without having to disconnect or disassemble the unit.

K.

Mounting Position: The mounting position of the suppressor shall permit a direct bus bar connection between the suppressor and the point of connection to the assembly bus.

L.

Panelboards: In addition to complying with all the requirements of Section 26 24 17, "Panelboards (GFE)", shall be provided with 200 percent rated neutral; isolated ground bus; and UL 67 and UL 1449 system labels.

2.2

SUPPRESSOR CRITERIA-PANELBOARDS SERVING INTERIOR NON-ESSENTIAL BUILDING LOADS

A.

Suppressors shall utilize solid-state components that operate bi-directionally. Provide a surge counter integral to the TVSS.

B.

Panelboard Location: Defined as branch circuit panel locations in accordance with C62.41, Category B3, unless otherwise shown on the drawings.

C.

Three-Phase, Four-Wire Configuration: Provide independent suppression elements connected line-to-ground (L-G), line-to-neutral (L-N), and neutral-to-ground (N-G).

D.

Metal Oxide Varistors (MOVs): If metal oxide varistors are used as suppression elements, each individual MOV must be rated for a minimum of 115 percent of nominal operating voltage.

E.

Turn-on/Turn-off Times: Suppressors shall have turn-on and turn-off times of less than 1-nanosecond for each element, less than 5 nanoseconds for each system.

F.

100,000 Ampere Surge Current Per Phase Criteria: Line-to-neutral maximum single impulse current rating of 50,000 amps (8 x 20 microsecond waveform). Line-to-ground maximum single impulse current rating of 50,000 amps (8 x 20 microsecond waveform). Neutral-to-ground maximum single impulse rating of 50,000 amps (8 x 20 microsecond waveform). Pulse life rating of 10,000 amps (8 x 20 microsecond waveform) with 6,000 occurrences in accordance with C62.45. Maximum clamping voltage and current rating when subjected to a

waveform with 1.2 by 50 microsecond, 6kV open circuit voltage, and 8.0 by 20 microsecond, 3kA short circuit current.

SYSTEM VOLTAGE WYE CONNECTED	CLAMPING VOLTAGES		
	L - N	L - G	N - G
208Y/120 Volts	400V	400V	400V

2.3 FILTERING

- A. Electromagnetic interference and radio frequency filters shall be provided per UL 1283 and UL 1449 for all suppressors. The filtering circuit shall provide a minimum insertion loss as indicated below. Note: Standardized insertion loss data obtained utilizing MIL-STD-220A 50 ohm insertion loss methodology.

Frequency	100 KHZ	1 MHZ	10 MHZ	100 MHZ
Attenuation (dB)	34	51	54	48
Attenuation Ratio	50:1	350:1	500:1	250:1

2.4 ANNUNCIATION (COVER-MOUNTED)

- A. Service Entrance Switchgear: Provide diagnostic and monitor panel. Provide visual status indicators, one for each suppression module. Provide one normally open and one normally closed dry contacts interlocked with status alarm monitoring. Component failure shall be detected by infrared detection and alarmed. Component thermal detection system. Provide a transient counter.
- B. Distribution Panels and Panelboard: Provide visual status indicators, one for each suppression module. Provide a transient counter.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine conditions for compliance with requirements for installation tolerances, power characteristics, and other conditions affecting performance of transient voltage surge suppressors. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Coordinate installation of TVSS system with manufacturers and suppliers of equipment to be protected. Demonstrate and train FAA authorized personnel for service and operation of the systems.

3.3 CONNECTIONS

- A. Ground each transient voltage surge suppressor enclosure. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A.

3.4 FIELD QUALITY CONTROL

- A. The Contractor shall have a representative on site during the FAA's acceptance testing and demonstration of this equipment to witness the proceedings.

END OF SECTION 26 43 13

APPENDIX A
Refurbish Traction Elevator
FAA MIA ATCT Miami, FL

Background:

The Miami MIA ATCT elevator was installed in 2001; total travel is 274'-0" with 23 stops. At this time, a complete refurbishment of the elevator is required. The list below describes the entire scope of the project.

Location of Project:

Miami International Airport ATCT
6400 N.W. 22nd Street
Air Traffic Control Tower
Miami, FL 33122

Project Description:

The work shall include furnishing all labor, materials, equipment, and services as necessary to repair the elevator with minimal service outage. The successful Contractor shall be responsible for all aspects of the refurbishment of the elevator as described in this Appendix, including any electrical, mechanical, architectural, fire alarm, security, communications and structural work associated with refurbishing the elevator. Refer to the Specifications for more requirements on schedule and elevator outages.

As part of the proposal, the Contractor shall provide a complete and comprehensive schedule to the Contracting Officer (CO) for review and evaluation. Upon contract award, the tendered Schedule will become a material term of contract performance. The Schedule shall outline all phases of the work and the impact on the operation of the elevator, particularly with regard to the time the elevator will be totally out of service. The tendered Schedule will be a factor evaluated by the FAA in making a decision for contract award.

Where "submittal required" is indicated below, the Contractor shall submit, after award of the contract, the manufacturers' detailed technical information for FAA review, acceptance or approval. Also required is a detailed description of the proposed technical means of performing the specified task within the firm fixed price of the executed contract.

The entire project on the traction elevator consists of the work in the list that follows:

1. Furnish and install a new microcomputer based traction control system for the existing tower elevator, complete with a new leveling system that includes the tape, tape reader and floor selector system. (Submittal required.)
 - a. Controller shall be the standard product of an elevator company regularly engaged in the manufacture elevator controller, elevator hardware and associated components for a complete and operating elevator system.
 - b. Controller shall be the VVVF type complete with a Harmonic Mitigation Transformer. The VVVF drive shall be state of the art solid state type specifically designed for elevator motor service. The VVVF drive shall be housed in a separate compartment within the same cabinet as the elevator positioning and safety controls. Provide an uninterruptible power supply (UPS) backup system for the controller to eliminate the need to reset or restart the controller due to power outages and voltage spikes, or the controller shall have non-volatile memory to accomplish automatic restart due to said outages and spikes. (Submittal required during proposal phase.)
 - c. The Harmonic Mitigation Transformer shall be properly sized and selected to isolate and protect the VVVF drive, and to eliminate transmission of harmonics back into the electrical distribution system serving the facility. (Submittal required.)

- 1) Two separate transformers in series may be necessary. If necessary provide additional line filters, and noise, spiking and notching suppressors to protect against feedback that might interfere with the operation of FAA electrical and electronic equipment located in the facility including the emergency generator.
- 2) The transformer coils shall be copper windings of continuous wound construction and shall be impregnated with non-hygroscopic thermosetting varnish.
- 3) All cores shall be constructed with low hysteresis and eddy current losses. Magnetic flux densities shall be kept well below the saturation point to prevent core over heating. The completed core and coils shall be bolted to the base of the enclosure, but isolated by means of rubber, vibration absorbing mounts. There shall be no metal-to-metal contact between the core and coil assembly and the enclosure except for a flexible safety ground strap. Sound isolation systems requiring the complete removal of all fastening devices will not be acceptable.
- 4) The core of the transformer shall be visibly grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable UL and National Electrical Code (NEC) standards.
- 5) The transformer enclosure shall be ventilated and be fabricated of heavy gauge, sheet steel construction. The entire enclosure shall be finished using a continuous process consisting of degreasing, cleaning, and phosphatizing, followed by electrostatic deposition of a polymer polyester powder coating and baking cycle to provide a uniform coating of all edges and surfaces. The coating shall be UL recognized for outdoor use. The coating color shall be ANSI 49.
- 6) Sound levels shall be warranted by the manufacturer not to exceed the following:
 - a) 15 to 50 kVA 45 db
 - b) 51 to 150 kVA 50 db
- 7) The transformer shall have the following characteristics:
 - a) Match existing kVA rating
 - b) Match existing Primary and Secondary wiring and voltage
 - c) Match existing temperature rating.
 - d) Four 2½ % primary taps, two above and two below rated voltage
 - e) Harmonic suppression in the 3rd, 5th, 7th, 9th, 11th, 13th, etc. harmonics by core magnetic flux cancellation.
 - f) Phase shift 30°
- d. The controller and VVVF drive shall be capable of being operated on the emergency-generator without problems with electrical energy feedback to the electrical power system.
- e. The controller shall have a phase monitoring circuit that will detect a loss of one or more phases of the incoming electrical power. This circuit shall open up the main power to the controller and keep it off until the phase loss is corrected. Once the phase loss is corrected, the controller shall restart and place the elevator back in normal service.
- f. The controller shall have an Internet interface for real time remote monitoring of the elevator by FAA or another entity through a web browser. Software shall be capable of running on a PC with Windows 2000, NT or XP as the operating system.
 - 1) The software and hardware on the controller shall have the capability of saving the data called for herein in non-volatile memory for a period of 7 days, and shall, when a PC is connected through the Internet or directly through an Ethernet connection, query the

operator to download the data in the form of reports. Alarms, faults and outages shall be saved for 30 days in non-volatile memory without download to a PC.

- 2) Data available through the interface shall include the distance that the elevator has traveled and the number of start/stops. In addition, the system shall log any alarms, outages, faults, power interruptions, number of hall calls and number of car destination selections.
 - 3) The system shall have the capability of notifying via telephone up to three numbers in the event of an alarm or outage.
 - 4) The monitoring software shall come on CD's and be able to operate on several PC's at the same time.
 - g. Controllers shall be the standard product of the manufacturer as specified in paragraph 1.a. above that has been regularly engaged in manufacturing state of the art elevator controllers for a period of at least 5 years and the controller supplied shall have been in successful use in the field for not less than 2 years. Controllers shall be manufactured by Motion Control Engineering, Inc. (MCE), GAL Manufacturing Corp, Computerized Elevator Control Corp. (CEC), ThyssenKrupp Elevator Company, Otis Elevator Company, Schindler Elevator Company, Kone Elevator Company or an approved substitution. List in the submittal at least 5 locations where these controllers are in service. FAA may request contact information for the locations listed.
 - h. The new car leveling system shall be complete with all new components on the car, in the hoistway and at each floor as required. The landing system shall provide to the controller high speed stepping signals, single floor run stepping signals, leveling and door zone signals and floor encoding signals. Each individual output signal shall be electrically isolated. The system shall have the capability to operate at 120 VAC. Tape shall be Type 316 stainless steel. If the tape must be magnetic as required by some manufacturers, another type of stainless steel may be substituted provided it is approved during the submittal process. The new leveling system shall not require or depend on individual slow down switches at each floor or landing. Leveling accuracy shall meet or exceed ASME A17.1-2007 Safety Code For Elevators and Escalators standards. (Submittal required.)
 - i. Provide, either as part of the controller or as a separate device, a seismic sensor capable of 3 axis sensing. The sensor shall have the capability of storing the peak acceleration in Gs in each axis for up to 15 seismic events. The sensor shall have an LCD interface with easy to read and understand the stored data and settings of the sensor. Latching contacts shall have the capability of being remotely reset. The sensor shall also function as a meter to display real time acceleration and deflection. Sensor shall comply with section 8.4 of ASME A17.1-2007 Safety Code For Elevators and Escalators, and be the standard product of Hunter Electrical Equipment or an approved substitution.
 - j. At the closeout of the project, furnish to the RE any special tools, software, etc. required to adjust, diagnose, change, edit, etc. any of the operating parameters. This shall include any specialized electronic tools, devices, instruments, etc. It shall not include standard off the shelf computers, meters, wrenches, etc. Provide training in the use of the above specified tools and software as specified.
2. Furnish and install a new AC hoist motor with tachometer encoder. Motor shall be designed for elevator system service. Bearings shall be the grease lubricated type with easily accessible grease zirks. Motor shall have a hot or cold rolled steel shaft fully machined for proper fit and balance. The motor shall have a cast iron frame, cast iron brackets and cast iron end bells to house the bearings. Insulation shall be class F with stator windings of copper insulated magnet wire. Insulation processing shall include a minimum of two dips and bakes of polyester varnish. Laminations shall be fully processed core plated electrical grade steel of a suitable gauge for elevator service. The motor shall have a hexagonal or other suitably shaped end on the out board shaft extension for hand cranking the motor. New motor shall be 480V / 3 Phase / 60 Hz. The use of transformers to adapt

motors having name plate voltages different than the specified voltages will not be allowed. (Submittal required.)

3. The Contractor shall examine and inspect the elevator traction machine at the very beginning of the construction phase of the project to determine if, during the bid and material ordering and shipment phases, the traction machine has deteriorated sufficiently to warrant complete replacement of the machine.
4. The Contractor shall have the option to perform either the work described in paragraph 5. or 6. The technical and pricing proposal submitted in response to this offer shall clearly identify which of the two options the vendor proposes to employ.
5. Recondition the existing traction machinery including bearing replacement, gear realignment and seals replacement. During the replacement of the bearings and seals, the gears shall be inspected and if replacement or repair is deemed necessary, the CO shall be notified immediately through the designated CO's Technical Representative (COTR). The brake shall have a single lever manual release mechanism. If not already present the brake shall have a switch or switches to signal the controller when the brake is set or released. Two switches shall be installed if there is any possibility that only one shoe is in the set or released position and the other is not. Final determination of the integrity of the main gear, worm gear, shaft, traction sheave and bearing housings shall be done by use of industrial X-ray, magnaflux analysis or both.
6. Furnish and install a new traction machine. Machine shall be the gear drive type with self aligning spherical roller bearings suitable for axial and radial loading. Gear box shall be cast steel that has been precision machined for accurate alignment of shafts, gears and bearings. Unit shall have a hard bronze main gear and a case hardened profile ground worm gear that is integral with its shaft. The worm gear shall have ball or roller thrust bearings capable of handling thrust in both directions. The independent main shaft shall be designed for easy removal and handling. The bronze gear and traction sheave shall be the demountable type. Traction sheave shall have a Brinnell hardness of 220. The brake pulley, coupling, flywheel or rotor shall be dynamically balanced. The brake shall have a single lever manual release mechanism. The brake shall have a switch or switches to signal the controller when the brake is set or released. Two switches shall be installed if there is any possibility that only one shoe is in the set or released position and the other is not. The release mechanism shall have a permanently attached metal plate with written instructions on its proper use. The traction machine shall be furnished with an attachment suitable for connecting a battery operated drill to hand crank the traction machine. Unit shall come completely assembled on a heavy rigid welded steel base, complete with the gear drive, hoist motor, brake and traction sheave. (Submittal required.)
7. Furnish and install new traction and deflection sheaves and hoist ropes with wedge shackles. (Submittal required.)
8. Install a new automatic hoist ropes lubricating system. (Submittal required.)
9. Furnish and install a new rope gripper for ascending car over-speed protection and unintended car movement protection as a result of a failure in the electric hoist motor, elevator brake system, coupling, shaft or gearing, the control system and any other component associated with car speed control. This provision shall be in compliance with ASME A17.1-2007 Safety Code For Elevators and Escalators. (Submittal required.)
10. Furnish and install one brushed stainless steel elevator car control operating panel (COP). Features shall include ADA hands free phone, digital position display, keyed stop switch, audible passing signal and illuminated alarm button. The phone shall communicate via the existing direct line. The panel shall have a keyed lock to prevent unauthorized access behind the panel. Car shall be ADA and ASME code compliant. Buttons shall be the product of Dupar Controls, Innovation Industries, Inc. or an approved substitution. Buttons shall be from the Bruiser Collection, and shall be set in an oval surround Braille mount or an approved substitution. (Submittal required.)
11. Program the emergency telephone in the elevator COP to a phone in the TRACON with a rollover to the CAB and then a rollover to AOCC.

12. Completely remove all existing wiring within and on the car and rewire to accommodate the new car control station, lighting and communications specified else where herein. All wiring shall comply with the National Electrical Code, ASME A17.1-2007 Safety Code For Elevators and Escalators and the attachment Elevator Electrical Requirements. Conduits and electrical raceways may be reused provided they are in compliance with the attachment Elevator Electrical Requirements, NFPA 70 and ASME A17.1-2007 Safety Code For Elevators and Escalators. No splices will be allowed between connection points in control wiring. (Submittal required.)
13. Furnish and install a non-contact door reopening device that complies with Americans With Disabilities Act or Rehabilitation Act ("ADA") requirements as further specified herein. If the existing re-opening device can be refurbished, indicate credit on bid form for re-using existing devices. (Submittal required).
14. Install new elevator safeties as required by ASME A17.1-2007 Safety Code For Elevators and Escalators. This does not include the car braking system unless specifically specified elsewhere herein. (Submittal required).
15. Furnish and install new final limit switches. (Submittal required.)
16. Furnish and install new slowdown limit switches near the terminal landings only if the existing leveling system is to remain in place and if the existing leveling system requires these switches. (Submittal required.)
17. Furnish and install a new traveling cable. No splices will be allowed between connection points in control wiring. (Submittal required.)
18. Replace the governor with a new state-of-the art governor. Governor components shall be in compliance with ASME A17.1-2007 Safety Code For Elevators and Escalators including, but not limited to, the replacement of the position transducer. (Submittal required.)
19. Furnish and install all new Machine Room wiring. Wiring shall include control and power wiring within the Machine Room. Power wiring shall be new from the disconnect switch that presently serves the devices requiring power. Wiring shall be in accordance with the attachment Elevator Electrical Requirements. (Submittal required.)
20. Furnish and install all new control wiring between the Machine Room equipment and the new controller. Wiring shall be in accordance with the attachment Elevator Electrical Requirements. (Submittal required.)
21. Remove all existing hoist-way wiring and call station wiring, and replace with new wiring between the machine room, hoist-way and call stations. Replace door interlock wiring with heat resistant wire. All wiring shall comply with the attachment Elevator Electrical Requirements. National Electrical Code, ASME A17.1-2007 Safety Code For Elevators and Escalators and the attachment Elevator Electrical Requirements. (Submittal required.)
22. Furnish and install a new car directional lantern with audible signals per ADA. (Submittal required.)
23. Install a new ceiling and lighting system that is in compliance with ADA. Use of an egg crate type lens for the lighting system will be permitted only if the egg crate is bright chrome in color and is a minimum of 1 inch thick and the openings are not greater than ¼ inch square. Other types of ceiling panels will be considered and will be acceptable if approved during the submittal stage. (Submittal required.)
24. Furnish and install new flush mounted lobby call stations for all floors. Units shall be brushed stainless steel with black trim. Call stations shall be the product of Innovation Industries, Inc. or an approved substitution. Buttons shall be from the Bruiser Collection or an approved substitution. (Submittal required).

25. Furnish and install a digital position display on the Ground and top floors. (Submittal required).
26. Furnish and install a new car door restrictor. The restrictor shall be in conformance with ASME A17.1-2007 Safety Code For Elevators and Escalators. The restrictor shall prevent opening of the car door or doors. The restrictor mechanism shall be either the mechanically or electrically operated type. Mount the mechanism on a ridged steel mounting bracket securely attached to the car's structure. (Submittal required.)
27. Furnish and install new spring loaded car and counter weight guide rollers. Guides shall be Holister-Whitney, Elasco or an approved substitution. Guide rollers shall have a minimum of three wheels and double supporting arms with the springs located between the supporting arms. The guide rollers shall have a double action tension device to compensate for rail misalignment, thus requiring no field adjustments or stops. Tires shall be heavy duty polyurethane securely bonded to a steel wheel. Rollers shall have permanently lubricated sealed roller or ball bearings. The arms shall be supported by permanently lubricated sleeve bearings. Side roller tires shall be wider than the edge roller for longer life. Rollers without double arms will be acceptable provided that the arms are cast or forged steel. The cast or forged arms and rollers shall be supported by bearings sufficiently heavy to prevent twisting, misalignment or early bearing failure. (Submittal required.)
28. Furnish and install Surge Protective Devices (SPD), equipment, in accordance with the attached specification Section 16672, on the motor and power supply to the controller. SPD equipment will not be required on the traveling cable terminations.
29. Furnish and install two Life Line Safety Anchors as manufactured by Safety Anchor, Limited, Pushlock as manufactured by Latchways plc or an approved substitution, permanently outside the hoist-way at each level that the elevator stops including the level just above the elevator pit. In lieu of installing the anchors in the walls adjacent to the elevator doors, the anchors, of a different type such as bolted "D" rings, may be installed above the ceiling, and be attached to the roof or floor structure above. If the anchors are installed out of immediate sight, a sign shall be placed either on the wall or on the ceiling just below the anchors, indicating that *Tie Off Points Are Located Above The Ceiling*. In some cases, it is impossible to attach these anchors to the walls adjacent to the hoistway doors or above a ceiling or to the structure above. If this is the case, it will be permitted to locate them inside the hoistway with appropriate signage. (Submittal required.)
30. CAUTION: Carefully examine the existing clearances between the car and hoistway doors. Examine the tracks, door rollers, pickup rollers and clutch for compatibility with current replacement parts. Some elevator doors are very close together and require special slim line or vane type clutches and special pickup rollers. If replacement parts are not available, allow for special machining and fabrication of replacement parts. Replace the existing hoist-way doors on floors that exhibit excessive wear and car doors that can not be adjusted to manufacturer's operating tolerances. Replace the clutch, door rollers, tracks, pickup rollers and clutch. Replace the existing hoist-way door interlocks. The interlocks shall be in conformance with ASME A17.1-2007 Safety Code For Elevators and Escalators. The interlocks shall prevent operation of the elevator unless the doors are fully closed and locked in position. Furnish and install new nylon and fire safety gibbs. (Submittal required.)
31. Replace the existing door operator. Door operator shall be GAL Model MOVFR or an approved substitution. Operator shall be the closed loop type operator utilizing a permanent magnet brushless electric motor with a built-in encoder and a microprocessor based inverter drive. Drive rollers shall remain engaged during operation to prevent separation of the car and hoist-way doors. Doors shall operate in a smooth and quiet manner. (Submittal required.)
32. Thoroughly clean the car top of all dirt, grease, debris, etc.
33. Clean the elevator pit of all dust, dirt and debris. Remove any foreign objects that may have been left or stored in the pit. Remove any rust on the rail anchors and buffer support structure at the floor level and up to a height of 3 feet above the floor by mechanical, chemical or hand methods. All chemicals shall be approved by FAA prior to use by the Contractor. Include MSDS sheets with the submittal. Chemicals shall not produce any noxious or irritating odors or gasses. Following the removal of the

rust, apply two coats of primer and two coats of paint specifically formulated for application on metallic surfaces for the purpose of protecting the metal from corrosion. (Submittal required.)

34. Contractor shall test, adjust and return elevator to normal and safe operation.
35. Replace the existing top of car inspection station. The new station shall be provided with a control panel on top of the car which, when activated, removes the car from normal service and allows the car to run at inspection speed from the top of the car only. The car top shall receive an exit guard railing securely attached to the top of the car. The inspection station shall have a buzzer and fire service light. (Submittal required.)
36. Check all attachments of rail brackets and tighten or repair as necessary. Inspect the rails for proper alignment and realign if required for smooth elevator operation. Thoroughly clean any structural surfaces that have dirt, grease, debris, etc. on the horizontal or near horizontal surfaces and edges.
37. Replace the existing hoistway stop switch in the pit and at the top of the hoistway. (Submittal required.)
38. Perform 5 year load test. Load test shall NOT include running the car into the buffers at full speed. Load test shall be observed by an approved elevator inspector under contract to FAA. Notify the CO a minimum of 7 calendar days prior to performing the test.
39. Install a new battery powered backup sump pump. The back up pump shall start when the water level reaches 4 inches above the normal start level of the main sump pump. Provide an electrical power connection to keep the battery charged. Connect the discharge of the backup pump into the existing pump discharge piping. If necessary, install check valves in the piping of both pumps to prevent short circuiting. The pump shall be a Trusty Warns S4.0 TT system with a capacity of 3840 gph at 8 feet of water head. Pump shall come complete with charger, mechanical float switch and marine battery or an approved substitution. The marine battery shall be a 100 amp-hour deep cycle type. Battery shall be capable of running the pump at the capacity specified above for a period of 5.25 hours on one battery. Mount the battery and battery charging unit on a wall mounted shelf as high as practicable without interfering with the movement of the elevator car in normal and abnormal operation, i.e. when the car is in full contact with the buffers in their fully compressed position. Shelf shall be noncombustible and either corrosion proof or protected by a coating impervious to water and battery acid attack. (Submittal required.)
40. Install a high water level alarm in the elevator pit. Level alarm shall be set to enunciate when the water level reaches a point 3 inches above the normal start level of the main sump pump alarm shall have battery back-up separate from the battery serving the auxiliary sump pump. (Submittal required.)
41. Replace the existing hoistway access switches with new keyed switches. Install a hoistway access switch at the machine room level. This switch shall allow slow movement of the car for access to the top or interior of the car. (Submittal required.)
42. Install new pit, overhead and hoist-way lighting in accordance with ASME A17.1-2007 Safety Code For Elevators and Escalators. Lighting shall consist of a minimum of two 4 foot long fluorescent fixtures with a minimum of two lamps each. Use the existing electrical circuits that serve the existing lights. (Submittal required.)
43. Install new GFI electrical outlets in the elevator pit, elevator hoistway overhead and machine room. (Submittal required.)
44. Clean the Machine Room floors and walls of all dirt and oil. Paint the floor and walls with one primer coat and two finish coats of paint. Floor shall be a light grey color and the walls shall be white. (Submit color chips for selection and approval.)
45. Remove the existing ceiling in the Machine Room and fire caulk all new penetrations with RE approved method and materials. (Submit samples for selection and approval.)

46. At the conclusion of the refurbishment, all equipment in the machine room shall be cleaned and degreased. Any new equipment, that does not have factory applied paint, shall be cleaned, degreased, primed and painted with one coat of primer and one coat of paint. Color shall be the standard color of the successful elevator repair company, provided it is approved by the FAA. (Submittal required during proposal phase.)
47. Contractor shall provide a 5-year parts and labor service contract for maintenance and repairs. The contract shall require coverage 24 hours-a-day seven (7) days a week. The contractor shall respond within 2 hours of notification of an elevator service interruption. (Maintenance and repair contract shall be priced as an additive item).

FAA Retained Equipment And Materials:

FAA will retain possession of the following list of equipment and materials. The contractor shall carefully remove these items of equipment and materials and deliver them to the place and person designated in the pre-construction conference.

ADA Requirements:

Listed below are the ADA requirements for elevators. These requirements shall be met to the maximum extent possible, recognizing that some of these requirements cannot be met due to space and dimensional limitations. Specifically, some FAA elevators have car dimension smaller than required by ADA.

Automatic Operations:

Elevator car shall operate automatically.
Elevator car shall automatically self-level to within ½-inch.
Elevator shall automatically correct for under and over travel.

Hall Call Buttons:

Call buttons in lobby and halls shall be centered 42-inches above floor.
Call buttons shall have visible signals to indicate when calls are registered.
Call buttons shall be no less than ¾-inch in smallest dimension.
Up direction button shall be mounted on top.
Buttons shall be raised or flush.
Objects mounted beneath hall call buttons shall project less than ¼-inch into hall.

Hall Lanterns:

Visible and audible signal in each hoist-way entrance shall indicate when the elevator car is answering a call.
Audible signal shall sound "once" for up direction and "twice" for down direction or have verbal enunciators to say "UP" or "Down".
Hall lantern fixtures shall be mounted (centered) at-least 72-inches above lobby floor.
Hall lantern fixtures visual elements shall be at least 2-1/2-inches in smallest dimension.
Signals shall be visible from the vicinity of hall call buttons.

Raised Braille Characters on Hoist-way Entrances:

All hoist-way entrances shall have raised floor designation on both door jambs with Braille.
Braille characters shall be centered 60-inches above floor.
Braille characters shall be 2-inches high.
Braille characters shall be permanently attached to door jambs.

Door Protective and Reopening Device:

Elevator car and hoist-way doors shall open and close automatically.
Elevator car and hoist-way doors shall stop and reopen automatically when they become obstructed.
Door reopening device shall open the doors without requiring contact from an obstruction passing through the door opening at heights of 5-inches to 29-inches above the floor.
Door reopening device shall keep the door open for at-least 20-Sec.

Door and Signal Timing for Hall Calls:

Minimum acceptable time from notification that the elevator car is answering a call to the time the door of the car starts to close shall be determined by the formula, $T=D/(1.5\text{ft/sec})$ where T = total time in seconds, and D = distance from a point in the lobby or corridor 60-inches directly in front of the farthest call button controlling the elevator car to the centerline of the hoist-way door and shall not exceed 5-Seconds.

Door Delay for Car Calls:

Elevator car and hoist-way doors shall remain open at-least 3-sec in response to a car call.

Floor Plan for Elevator Cars:

Elevator car floor area shall provide enough space for wheelchair users to enter the car, maneuver within reach of the controls, and exit the car.

Elevator car and hoist-way doors shall open to a minimum of 36-inches.

Elevator car shall be at-least 54-inches deep from rear of car to inside face of door.

Elevator car width shall be at-least 80-inches for center opening doors.

Clearance between elevator car platform sill and the edge of the hoist-way landing shall be no greater than 1-1/4-inches.

Floor Surfaces:

Floor surfaces shall be firm.

Floor surfaces shall be stable.

Floor surfaces shall be slip resistant.

Illumination Levels:

Elevator car controls illumination shall be at least 5 foot candles.

Elevator platform illumination shall be at least 5 foot candles.

Elevator car threshold illumination shall be at least 5 foot candles.

Elevator car landing sill illumination shall be at least 5 foot candles.

Car Controls:

Car control panel buttons shall be at-least 3/4-inch in dimension.

Car control panel buttons shall be raised or flush.

Car control panel buttons shall be designated by Braille.

Car control panel buttons shall be no higher than 48-inches above the floor.

Emergency control buttons shall be grouped together at the bottom of the car control panel.

Emergency control buttons shall be centered no less than 35-inches above the floor.

Car control panel shall be located on front wall.

Car Position Indicators:

Visual car position indicator shall be located inside the car above the car control panel or the car door to show the position of the car in the hoist-way.

Floor number indicator shall illuminate and an audible signal sound inside the car when the elevator car stops or passes a floor.

Floor number indicators shall be a minimum of 1/2-inches high.

Audible signals shall be no less than 20db and no higher than 1500Hz.

Emergency Communications:

The highest part of the two-way communication system shall be a maximum of 48-inches from the floor of the car.

The communication system shall be identified by a raised or recessed symbol and approved lettering adjacent to the device.

The handset cord shall be a minimum of 29-inches in length (where applicable).

Emergency intercom shall not require voice communication.

Site Location:

Federal Aviation Administration

6400 N.W. 22nd Street

Air Traffic Control Tower, MIA ATCT

Miami, FL 33122

A site visit by interested Contractors is highly recommended. Interested contractors may make arrangements to visit the site by contacting:

Site Contact:

Jose Hernandez, WEN62-MIA
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Miami, FL 33122

Contracting Officer:

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AAQ-510
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College Park, GA 30337
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Technical Contact:

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END OF APPENDIX

APPENDIX B
Refurbish Traction Elevator
FAA TMB ATCT in Miami, FL

Background:

The Kendall-Tamiami Executive Airport (TMB) ATCT elevator was made operational in 1966. It is a six stop traction type, with a total travel of 60'-0", and a side mounted geared machine located on the first floor, adjacent to the elevator shaft. The controller is an antiquated electro-mechanical type that needs total replacement. The list below describes the anticipated scope of the project.

Location of Project:

Federal Aviation Administration
Air Traffic Control Tower, TMB ATCT
14774 SW 128 Street
Miami, FL 33196

Project Description:

The work shall include furnishing all labor, materials, equipment, and services as necessary to repair the elevator with minimal service outage. The successful Contractor shall be responsible for all aspects of the refurbishment of the elevator as described in this Statement Of Work (SOW), including any decommissioning/demolition, electrical, mechanical, architectural and structural work associated with replacing the elevator. Refer to the subsection Schedule Of Work for more requirements on schedule and elevator outages.

As part of the proposal, the Contractor must provide a complete and comprehensive schedule to the Contracting Officer for review and evaluation. Upon contract award, the tendered Schedule will become a material term of contract performance. The Schedule must outline all phases of the work and the impact on the operation of the elevator, particularly with regard to the time the elevator will be totally out of service. The tendered Schedule will be a factor evaluated by the FAA in making a decision for contract award.

Where "submittal required" is indicated below, the Contractor shall submit, after award of the contract, the manufacturers' detailed technical information for FAA review, acceptance or approval. Also required is a detailed description of the proposed technical means of performing the specified task within the firm fixed price of the executed contract.

The entire project on the traction elevator consists of the work in the list that follows:

1. Furnish and install a new microcomputer based traction control system for the existing tower elevator, complete with a new leveling system that includes the tape, tape reader and floor selector system. (Submittal required.)
 - a. Controller shall be a non-proprietary generic system with a 100% open software protocol.
 - b. Controller shall be the VVVF type complete with an isolation transformer properly sized and selected to eliminate transmission of harmonics back into the electrical distribution system for the facility. Provide all necessary line filters, and noise, spiking and notching suppressors to protect against feedback that might interfere with the operation of FAA electrical and electronic equipment located in the facility. Provide an uninterruptible power supply (UPS) backup system for the controller to eliminate the need to reset or restart the controller due to power outages and voltage spikes, or the controller shall have non-volatile memory to accomplish automatic restart due to said outages and spikes. (Submittal required during proposal phase.)
 - c. The controller and VVVF drive shall be capable of being operated on the emergency-generator without problems with electrical energy feedback to the electrical power system.

- d. The controller shall have an Internet interface for real time remote monitoring of the elevator by FAA or other entity through a web browser. Software shall run on a PC with Windows 2000, NT or XP as the operating system.
 - 1) The software and hardware on the controller shall have the capability of saving the data called for herein for a period of 7 days, and shall, when a PC is connected through the Internet or directly through an Ethernet connection, query the operator to download the data in the form of reports. Alarms, faults and outages shall be saved for 30 days without download to a PC.
 - 2) Data available through the interface shall include the distance that the elevator has traveled and the number of start/stops. In addition, the system shall log any alarms, outages, faults, power interruptions, number of hall calls and number of car destination selections.
 - 3) The system shall have the capability of notifying via telephone up to three numbers in the event of an alarm or outage.
 - 4) The monitoring software shall come on CD's and be able to operate on several PC's at the same time.
 - e. Controllers shall be the standard product of a company that has been regularly engaged in manufacturing state of the art elevator controllers for a period of at least 5 years and the controller supplied shall have been in successful use in the field for not less than 2 years. Controllers shall be manufactured by Motion Control Engineering, Inc. (MCE), Atel Elevator Corporation, Electronic Controls Inc, GAL Manufacturing Corp, Computerized Elevator Control Corp. (CEC) or an approved substitution. List in the submittal at least 5 locations where these controllers are in service. FAA may request contact information for the locations listed.
 - f. Provide, either as part of the controller or as a separate device, a seismic sensor capable of 3 axis sensing. The sensor shall have the capability of storing the peak acceleration in Gs in each axis for up to 15 seismic events. The sensor shall have an LCD interface with easy to read and understand the stored data and settings of the sensor. Latching contacts shall have the capability of being remotely reset. The sensor shall also function as a meter to display real time acceleration and deflection. Sensor shall comply with section 8.4 of ASME A17.1-2007 Safety Code For Elevators and Escalators, and be the standard product of Hunter Electrical Equipment or an approved substitution.
2. Furnish and install a new AC hoist motor with tachometer encoder. Motor shall be designed for elevator system service. Bearings shall be the grease lubricated type with easily accessible grease zirks. Motor shall have a hot or cold rolled steel shaft fully machined for proper fit and balance. The motor shall have a cast iron frame, cast iron brackets and cast iron end bells to house the bearings. Insulation shall be class F with stator windings of copper insulated magnet wire. Insulation processing shall include a minimum of two dips and bakes of polyester varnish. Laminations shall be fully processed core plated electrical grade steel of a suitable gauge for elevator service. New motor shall be 208V / 3 Phase / 60 Hz. The use of transformers to adapt motors having name plate voltages different than the specified voltages will not be allowed. (Submittal required.)
 3. The Contractor shall have the option to perform either the work described in paragraph 4 or 5 below. The technical and pricing proposal submitted in response to this offer must clearly identify which of the two options the vendor proposes to employ.
 4. Recondition the existing traction machinery including bearing replacement, gear realignment and seals replacement. During the replacement of the bearings and seals, the gears shall be inspected and if replacement or repair is deemed necessary, the Contracting Officer must be notified immediately through the designated Contracting Officer's Technical Representative (COTR). Final determination of the integrity of the main gear, worm gear, shaft, traction sheave and bearing housings shall be done by use of industrial X-ray, magnaflux analysis or both.

5. Furnish and install a new traction machine. Machine shall be the gear drive type with self aligning spherical roller bearings suitable for axial and radial loading. Gear box shall be cast steel that has been precision machined for accurate alignment of shafts, gears and bearings. Unit shall have a hard bronze main gear and a case hardened profile ground worm gear that is integral with its shaft. The worm gear shall have ball or roller thrust bearings capable of handling thrust in both directions. The independent main shaft shall be designed for easy removal and handling. The bronze gear and traction sheave shall be the demountable type. Traction sheave shall have a Brinnell hardness of 220. The brake pulley, coupling, flywheel or rotor shall be dynamically balanced. Unit shall come completely assembled on a heavy rigid welded steel base, complete with the gear drive, hoist motor, brake and traction sheave. (Submittal required.)
6. Furnish and install new traction and deflection sheaves and hoist ropes with wedge shackles; this will be included in the base bid. (Submittal required.)
7. In lieu of paragraph 6 above, and if so stated on the bid form, Contractor may furnish and install new hoist ropes with wedge shackles, with an optional amount to replace the deflector sheaves, if needed. (Submittal required.)
8. Furnish and install a new governor cable. (Submittal required.)
9. Furnish and install one brushed stainless steel elevator car control operating panel (COP). Features shall include ADA hands free phone, independent service, digital position display, keyed stop switch, audible passing signal and illuminated alarm button. The phone shall communicate with the machine room, hoist-way and shall connect with the existing direct line. Car shall be ADA and ASME code compliant. Buttons shall be the product of Dupar Controls, Innovation Industries, Inc. or an approved substitution. Buttons shall be from the Bruiser Collection, and shall be set in an oval surround Braille mount or an approved substitution. (Submittal required.)
10. Completely remove all existing wiring within and on the car and rewire to accommodate the new car control station, lighting and communications specified else where herein. All wiring shall comply with the National Electrical Code, ASME A17.1-2007 Safety Code For Elevators and Escalators and the attachment Elevator Electrical Requirements. Conduits and electrical raceways may be reused provided they are in compliance with NFPA 70 and ASME A17.1-2007 Safety Code For Elevators and Escalators. (Submittal required.)
11. Furnish and install a non-contact door reopening device that complies with Americans With Disabilities Act or Rehabilitation Act ("ADA") requirements as further specified herein. (Submittal required).
12. Install new elevator safeties as required by ASME A17.1-2007 Safety Code For Elevators and Escalators. (Submittal required).
13. Furnish and install a new traveling cable. (Submittal required.)
14. Install a new compensating chain. Chain shall have welded links and shall be plastic wrapped to prevent noise.
15. Install a guide device in the elevator pit for the compensating chain. The guide device shall be permanently installed by attachment to the elevator pit floor and have rollers to guide the chain. Rollers shall have permanently lubricated sealed roller or ball bearings. The device shall prevent the compensating chain from swinging with the possibility of making contact with the hoistway walls or any equipment or devices mounted in the hoistway.
16. Replace the governor with a new state-of-the art governor. Governor components shall be in compliance with ASME A17.1-2007 Safety Code For Elevators and Escalators including, but not limited to, the replacement of the position transducer. (Submittal required.)

17. Furnish and install a new rope gripper for ascending car over-speed protection and unintended car movement protection as a result of a failure in the electric hoist motor, elevator brake system, coupling, shaft or gearing, the control system and any other component associated with car speed control. This provision shall be in compliance with ASME A17.1-2007 Safety Code For Elevators and Escalators. (Submittal required.)
18. If needed for required clearances, relocate the two electrical disconnects in the existing machine room to provide the code required clearances. One disconnect serves the elevator motor and the other serves the elevator lights. (Submit sketches for approval)
19. Furnish and install all new Machine Room wiring. Wiring shall include control and power wiring within the Machine Room. Power wiring shall be new from the disconnect switch that presently serves the devices requiring power. Wiring shall be in accordance with the attachment Elevator Electrical Requirements. (Submittal required.)
20. Furnish and install all new control wiring between the Machine Room equipment and the new controller. Wiring shall be in accordance with the attachment Elevator Electrical Requirements. (Submittal required.)
21. Remove all existing hoist-way wiring and call station wiring, and replace with new wiring between the machine room, hoist-way and call stations. Replace door interlock wiring with heat resistant wire. All wiring shall comply with the National Electrical Code, ASME A17.1-2007 Safety Code For Elevators and Escalators and the attachment Elevator Electrical Requirements. (Submittal required.)
22. Furnish and install a new car directional lantern with audible signals per ADA. (Submittal required.)
23. Install a new ceiling and lighting system that is in compliance with ADA. Use of an egg crate type lens for the lighting system will be permitted only if the egg crate is bright chrome in color and is a minimum of 1 inch thick and the openings are not greater than 1/4 inch square. Other types of ceiling panels will be considered and will be acceptable if approved during the submittal stage. (Submittal required.)
24. Install a new lighting system that is in compliance with ADA. Replace the existing exhaust fan with a new centrifugal fan with a minimum capacity of 200 cfm and a Sone value of 3 or less. Fan shall have a cabinet mounted SCR speed controller. (Submittal required.)
25. Furnish and install new recessed mounted lobby call stations for the 1st, 2nd, 3rd, 4th and 5th floors. Units shall be brushed stainless steel with black trim. Call stations shall be the product of Innovation Industries, Inc. or an approved substitution. Buttons shall be from the Bruiser Collection or an approved substitution. (Submittal required.)
26. Furnish and install a digital position display on the Ground and 5th floors. (Submittal required.)
27. Replace the existing hoist-way door interlocks. The interlocks shall be in conformance with ASME A17.1-2007 Safety Code For Elevators and Escalators. The interlocks shall prevent operation of the elevator unless the doors are fully closed and locked in position. (Submittal required.)
28. Furnish and install new spring loaded car and counter weight guide rollers. Guides shall be Holister-Whitney, Elasco or an approved substitution. Guide rollers shall have three wheels and double supporting arms with the springs located between the supporting arms. The guide rollers shall have a double action tension device to compensate for rail misalignment, thus requiring no field adjustments or stops. Tires shall be heavy duty polyurethane securely bonded to a steel wheel. Rollers shall have permanently lubricated sealed roller or ball bearings. Side roller tires shall be wider than the edge roller for longer life. (Submittal required.)
29. Furnish and install new final limit switches. (Submittal required.)
30. Furnish and install new slowdown limit switches near the terminal landings. (Submittal required.)

31. Recondition the interior finish of the elevator car, including the wall skin and ceiling. Submit photographs with complete specifications on all materials proposed and/or samples of the materials proposed. More than one scheme may be proposed with separate pricing for each. Interior finishes shall be the standard product of Retro Elevator or an approved substitution. All interior finishes, except flooring, shall be attached with mechanical fasteners and/or two sided tape. Tape shall be the product of 3M or an approved substitution. The use of glues or paints will not be allowed inside the ATCT. (Submittal required during proposal stage.)
32. Remove the existing flooring and install a new vinyl floor. Before beginning the removal of the existing flooring the Contractor shall arrange for a certified asbestos sampling and testing agency to determine if asbestos is present. If asbestos is present, notify the Resident Engineer (RE) immediately. (Submittal required during proposal stage.)
33. Furnish and install Transient Electrical Surge Suppression (TVSS), equipment, in accordance with the attached specification Section 16672, on the motor and power supply to the controller. TVSS equipment will not be required on the traveling cable terminations.
34. Furnish and install two Life Line Safety Anchors as manufactured by Safety Anchor, Limited, Pushlock as manufactured by Latchways plc or an approved substitution, permanently outside the hoist-way at each level that the elevator stops including the level just above the elevator pit. In lieu of installing the anchors in the walls adjacent to the elevator doors, the anchors, of a different type, may be installed above the ceiling, and be attached to the roof or floor structure above. If the anchors are installed out of immediate sight, a sign shall be placed either on the wall or on the ceiling just below the anchors, indicating that "Tie Off Points Are Located Above The Ceiling".
35. Replace the existing hoist-way doors and car doors. Furnish and install new stainless steel doors including tracks, closers, nylon gibbs, door rollers and pick-up roller assemblies. Replace the existing door operator. Door operator shall be GAL or an approved substitution. Operator shall be the closed loop type operator utilizing a permanent magnet brushless electric motor with a built-in encoder and a microprocessor based inverter drive. Drive rollers shall remain engaged during operation to prevent separation of the car and hoist-way doors. Doors shall operate in a smooth and quiet manner. (Submittal required.)
36. Install new door edge seals, i.e. astragals, on all hoist-way doors and the car doors that will remain in place. (Submittal required.)
37. Floor numbers shall be indicated on the hoist-way side of the hoist-way doors. Alpha numeric self adhesive labels shall be used. The alpha numeric characters shall be a minimum of 2 inches high and shall be a contrasting color to the hoistway door color, preferably white. (Submittal required.)
38. Thoroughly clean the car top of all dirt, grease, debris, etc.
39. Clean the elevator pit of all dust, dirt and debris. Remove any foreign objects that may have been left or stored in the pit. Remove any rust on the rail anchors and buffer support structure at the floor level and up to a height of 3 feet above the floor by mechanical, chemical or hand methods. All chemicals shall be approved by FAA prior to use by the Contractor. Include MSDS sheets with the submittal. Chemicals shall not produce any noxious or irritating odors or gasses. Following the removal of the rust, apply two coats of primer and two coats of paint specifically formulated for application on metallic surfaces for the purpose of protecting the metal from corrosion. (Submittal required.)
40. Contractor shall test, adjust and return elevator to normal and safe operation.
41. Renovation shall bring the elevator in compliance with ADA requirements to the maximum extent possible. The body of this document contains specific ADA requirements.
42. Replace the existing top of car inspection station. The new station shall be provided with a control panel on top of the car which, when activated, removes the car from normal service and allows the car to run at inspection speed from the top of the car only. The car top inspection station shall include

an exit guard railing securely attached to the top of the car along with a buzzer and fire service light. (Submittal required.)

43. Replace the existing car leveling system complete with all new components on the car and at each floor. The landing system shall provide to the controller high speed stepping signals, single floor run stepping signals, leveling and door zone signals and floor encoding signals. Each individual output signal shall be electrically isolated. The system shall have the capability to operate at 120 VAC. Tape shall be Type 316 stainless steel. Leveling accuracy shall meet or exceed ASME A17.1-2007 Safety Code For Elevators and Escalators standards. (Submittal required.)
44. Check all attachments of rail brackets and tighten or repair as necessary. Inspect the rails for proper alignment and realign if required for smooth elevator operation. Thoroughly clean any structural surfaces that have dirt, grease, debris, etc. on the horizontal or near horizontal surfaces and edges.
45. Replace the existing hoistway stop switch in the pit and at the top of the hoistway. (Submittal required.)
46. Perform 5 year load test. Load test shall NOT include running the car into the buffers at full speed.
47. Replace the existing elevator pit sump pump. Provide a new [Type 304] [Type 316] stainless steel pump pit cover. Reuse existing pump discharge piping and pump pit vent to the maximum extent possible. Pump shall be the standard product of Zoeller Pump Co. or an approved substitution and shall include the Zoeller Oil Guard System or an approved substitution. Clean sump pump pit and area around it. (Submittal required.)
48. Install a new battery powered backup sump pump. The back up pump shall start when the water level reaches 4 inches above the normal start level of the main sump pump. Provide an electrical power connection to keep the battery charged. Connect the discharge of the backup pump into the existing pump discharge piping. The pump shall be a Trusty Warns S4.0 TT system with a capacity of 3840 gph at 8 feet of water head. Pump shall come complete with charger, mechanical float switch and marine battery or an approved substitution. The marine battery shall be a 100 amp-hour deep cycle type. Battery shall be capable of running the pump at the capacity specified above for a period of 5.25 hours on one battery. Mount the battery and battery charging unit on a wall mounted shelf as high as practicable without interfering with the movement of the elevator car in normal and abnormal operation, i.e. when the car is in full contact with the buffers in their fully compressed position. Shelf shall be noncombustible and either corrosion proof or protected by a coating impervious to water and battery acid attack. (Submittal required.)
49. Install a high water level alarm in the elevator pit. Level alarm shall be set to enunciate when the water level reaches a point 3 inches above the normal start level of the main sump pump alarm shall have battery back-up separate from the auxiliary sump pump. (Submittal required.)
50. Replace the existing hoist-way access switch with a new keyed switch. This switch shall allow slow movement of the car for access to the top or interior of the car. (Submittal required.)
51. Install new pit and hoist-way lighting in accordance with ASME A17.1-2007 Safety Code For Elevators and Escalators. Lighting shall consist of a minimum of two 4 foot long fluorescent fixtures with a minimum of two lamps each. Use the existing electrical circuit that serves the existing light. (Submittal required.)
52. Install new electrical outlets in the elevator pit, elevator hoistway overhead and machine room. (Submittal required.)
53. Replace the existing pit ladder with a new ladder that is in accordance with ASME A17.1-2007 Safety Code For Elevators and Escalators. (Submittal required.)
54. Program the emergency telephone in the elevator car COP to a phone in the base building with a rollover to the CAB and then a rollover to AOCC.

55. Clean the Machine Room floors and walls of all dirt and oil.
56. At the conclusion of the refurbishment, all equipment in the machine room shall be cleaned and degreased. Any new equipment, that does not have a factory applied paint, shall be cleaned, degreased, primed and painted with one coat of primer and one coat of paint. Color shall be the standard color of the successful elevator repair company, provided it is approved by the FAA. (Submittal required during proposal phase.)
57. Contractor shall provide a 5-year parts and labor service contract for maintenance and repairs. The contract shall require coverage 24 hours-a-day seven (7) days a week. The contractor shall respond within 10 hours of notification of an elevator service interruption. (Maintenance and repair contract shall be priced as an additive item).

FAA Retained Equipment And Materials:

FAA may retain possession of certain pieces of equipment; a list will be provided at the pre-construction conference. The contractor shall carefully remove these items of equipment and materials and deliver them to the place and person designated as discussed in the pre-construction conference.

ADA REQUIREMENTS:

Listed below are the main ADA requirements for elevators. These requirements shall be met to the maximum extent possible, recognizing that some of these requirements cannot be met due to space and dimensional limitations at some current FAA installations.

Automatic Operations:

Elevator car shall operate automatically.
Elevator car shall automatically self-level to within ½-inch.
Elevator shall automatically correct for under and over travel.

Hall Call Buttons:

Call buttons in lobby and halls shall be centered 42-inches above floor.
Call buttons shall have visible signals to indicate when calls are registered.
Call buttons shall be no less than ¾-inch in smallest dimension.
Up direction button shall be mounted on top.
Buttons shall be raised or flush.
Objects mounted beneath hall call buttons shall project less than ¼-inch into hall.

Hall Lanterns:

Visible and audible signal in each hoist-way entrance shall indicate when the elevator car is answering a call.
Audible signal shall sound "once" for up direction and "twice" for down direction or have verbal enunciators to say "UP" or "Down".
Hall lantern fixtures shall be mounted (centered) at-least 72-inches above lobby floor.
Hall lantern fixtures visual elements shall be at least 2-1/2-inches in smallest dimension.
Signals shall be visible from the vicinity of hall call buttons.

Raised Braille Characters on Hoist-way Entrances:

All hoist-way entrances shall have raised floor designation on both door jambs with Braille.
Braille characters shall be centered 60-inches above floor.
Braille characters shall be 2-inches high.
Braille characters shall be permanently attached to door jambs.

Door Protective and Reopening Device:

Elevator car and hoist-way doors shall open and close automatically.
Elevator car and hoist-way doors shall stop and reopen automatically when they become obstructed.
Door reopening device shall open the doors without requiring contact from an obstruction passing through the door opening at heights of 5-inches to 29-inches above the floor.
Door reopening device shall keep the door open for at-least 20-Sec.

Door and Signal Timing for Hall Calls:

Minimum acceptable time from notification that the elevator car is answering a call to the time the door of the car starts to close shall be determined by the formula, $T=D/(1.5\text{ft/sec})$ where T = total time in seconds, and D = distance from a point in the lobby or corridor 60-inches directly in front of the farthest call button controlling the elevator car to the centerline of the hoist-way door and shall not exceed 5-Seconds.

Door Delay for Car Calls:

Elevator car and hoist-way doors shall remain open at-least 3-sec in response to a car call.

Floor Plan for Elevator Cars:

Elevator car floor area shall provide enough space for wheelchair users to enter the car, maneuver within reach of the controls, and exit the car.

Elevator car and hoist-way doors shall open to a minimum of 36-inches.

Elevator car shall be at-least 54-inches deep from rear of car to inside face of door.

Elevator car width shall be at-least 80-inches for center opening doors.

Clearance between elevator car platform sill and the edge of the hoist-way landing shall be no greater than 1-1/4-inches.

Floor Surfaces:

Floor surfaces shall be firm.

Floor surfaces shall be stable.

Floor surfaces shall be slip resistant.

Illumination Levels:

Elevator car controls illumination shall be at least 5 foot candles.

Elevator platform illumination shall be at least 5 foot candles.

Elevator car threshold illumination shall be at least 5 foot candles.

Elevator car landing sill illumination shall be at least 5 foot candles.

Car Controls:

Car control panel buttons shall be at-least 3/4-inch in dimension.

Car control panel buttons shall be raised or flush.

Car control panel buttons shall be designated by Braille.

Car control panel buttons shall be no higher than 48-inches above the floor.

Emergency control buttons shall be grouped together at the bottom of the car control panel.

Emergency control buttons shall be centered no less than 35-inches above the floor.

Car control panel shall be located on front wall.

Car Position Indicators:

Visual car position indicator shall be located inside the car above the car control panel or the car door to show the position of the car in the hoist-way.

Floor number indicator shall illuminate and an audible signal sound inside the car when the elevator car stops or passes a floor.

Floor number indicators shall be a minimum of 1/2-inches high.

Audible signals shall be no less than 20db and no higher than 1500Hz.

Emergency Communications:

The highest part of the two-way communication system shall be a maximum of 48-inches from the floor of the car.

The communication system shall be identified by a raised or recessed symbol and approved lettering adjacent to the device.

The handset cord shall be a minimum of 29-inches in length (where applicable).

Emergency intercom shall not require voice communication.

SITE LOCATION:

Federal Aviation Administration

Air Traffic Control Tower, TMB ATCT

14774 SW 128 Street

Miami, FL 33196

A site visit by interested Contractors is highly recommended. Interested contractors may make arrangements to visit the site by contacting:

Site Contact:

Jose Hernandez, WEN62-MIA
305 869 5349 OF
Miami International Airport
6400 N.W. 22nd Street
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Tracie Harris
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END of APPENDIX B

FAA ATO

